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CONTENTS AND SUBJECT INDEX

Intestinal Obstruction. Carl P. Schlicke, M.D.; J. Arnold Bargen, M.D., and Claude F. Dixon, M.D., Rochester, Minn. 1411

Hemorrhagic Diathesis of the Newborn. W. W. Waddell Jr., M.D., and George McL. Lawson, M.D., University, Va. 1416
Discussed by Drs. Sweet, Brown and Waddell.

Climate and Military Preparedness. Charles I. Singer, M.D., Long Beach, N. Y. 1421

Sterility in the Male: Diagnosis and Treatment. Henry A. R. Kreutzmann, M.D., San Francisco ... 1424

Human Infertility. S. R. Meaker, M.D., and Samuel N. Vose, M.D., Boston 1426

Testicular Biopsy. C. W. Charny, M.D., Philadelphia 1429
Papers of Dr. Kreutzmann, Drs. Meaker and Vose and Dr. Charny discussed by Drs. Hotchkiss, Huhner, Sangree, Williams, Kreutzmann, Charny and Hagner.

Asthmatic Bronchitis. Lee Bivings, M.D., Atlanta, Ga. 1434
Discussed by Drs. Davison, Quillian, Lowenburg and Bivings.

Intramural Postgraduate Education. Edwin F. Daily, M.D., Washington, D. C. 1436

Decubitus in Fractures. Theodore A. Fox, M.D., and George L. Apfelbach, M.D., Chicago 1438

Failure of Gelatin or Aminoacetic Acid to Increase the Work Ability of Normal Human Muscles. G. L. Maison, M.D., Detroit 1439

CLINICAL NOTES

Rocky Mountain Spotted Fever. M. H. Cohen, M.D., York, Pa. . 1441

SPECIAL ARTICLE

Contributions of the World War to Medicine. J. R. Darnall, M.D., Washington, D. C. 1443

COUNCIL ON PHARMACY AND CHEMISTRY AND COUNCIL ON PHYSICAL THERAPY

Clinical Contraceptive Results. Gilbert W. Beebe, New York, and Clarence J. Gamble, M.D., Milton, Mass. 1451

COUNCIL ON PHARMACY AND CHEMISTRY 1454

EDITORIALS

Case Postponed Indefinitely 1456

Banti's Disease or Syndrome? .. 1456

Cleveland Museum of Health ... 1457

CURRENT COMMENT

Guy's Hospital Reports 1458

Expenditures in Family Budgets. 1458

MEDICAL PREPAREDNESS

Cooperation of Health Agencies with Army Authorities. Travis P. Burroughs, M.D., and A. L. Frechette, M.D., Concord, N. H. 1459

ORGANIZATION SECTION

Hospitalization of Negroes 1461

Western New York Medical Plan, Inc. George R. Critchlow, M.D., Buffalo 1461

(Subject Index on next page)

THE STUDENT SECTION

The Physician Himself. Paul D. White, M.D., Boston 1495

Medical Students and the War .. 1499

Digest and Reviews 1501

Comments 1505

Medical College News 1506

A. M. A. SESSION CLEVELAND JUNE 2-6, 1941

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics; "OS," Organization Section; "SS," Student Section.

A. M. A. trial postponed....E-1456
Acid, acetylsalicylic, hypersensitivity....ab-1485
tannic, for decubitus....*1438
Adrenal cortex extract for infections....ab-1487
Amino-acids and muscular fatigue....*1439
Androgens, injection effect on spermatozoa.*1424
Anemia, Banti's disease or syndrome?..E-1456
Antiseptics, "staining," action....1476
Arm, recurrent cancer or elephantiasis....1477
Army, British, tuberculosis in recruits; microradiographic survey....ab-1492
hardening of troops; climatogram....*1421
mobilization of National Guard, N. H..*1459
Asthma after respiratory infection....*1434
from karaya, etc....ab-1491
Auto and medical expenditures....E-1458
Aviation deafness....ab-1486
medicine at Virginia....SS-1506
Bacteriology, relation to pathology....SS-1503
Banana intake and metabolism....ab-1483
Barbiturates poisoning, picrotoxin for...ab-1489
Biopsy, testicular....*1429
Birth Control, clinical results in....*1451
Blood conservation, methods....ab-1484
new service at Michael Reese....1465
pressure, low; ideal normal....ab-1489
prothrombin deficiency in newborn....*1416
sugar (low) causes....1476
sugar (low), remove pancreas tumor..ab-1494
transfusion of serum and plasma in hemorrhage....ab-1492
vitamin B_1 in healthy....ab-1494
Board Examinations....1478
Bobbs, J. S., first gallstone operation by.SS-1505
Bombs exploding, effect on lungs....ab-1492
Book Notices....1479
Books Received....Adv. page 36
Brain hemorrhage in newborn; vitamin K in....*1416
Breast cancer, recurrent or elephantiasis...1477
Brinkley loses libel suit....1468
Bronchitis after respiratory infection....*1434
Bureau of Investigation....1473
Bureau of Legal Medicine and Legislation..1482
Calamine varnish prevents decubitus....*1438
Cancer in oil refinery workers....ab-1490
Cardiovascular Disease in physicians....*1495
vitamin B treatment....1476
Carlson, A. J., gives library to Chicago....1465
Cesarean Section, first, by Dr. Richmond.SS-1505
Cleveland Museum of Health....E-1457
Climate and military preparedness....*1421
Clinical Medicine, relation to pathology.SS-1503
College of Medical Evangelists....SS-1508
Columbia awards scholarships....SS-1508
Communicable Disease in World War....*1448
Coral, grow in tissue?....1477
Cornell students elect military training.SS-1506
Correspondence....1474
Council on Medical Education and Hospitals.1461
Council on Pharmacy and Chemistry....1451
Creighton summer clinic....SS-1507
Deafness, aviation....ab-1486
Deaths....1470
Decubitus, prevention; treatment....*1438
Desoxycorticosterone acetate, implant in myasthenia gravis....C-1475
Dextrose tolerance test in hypoglycemia....1476
Diabetes Mellitus diet, against laxity....C-1474
insulin lipodystrophy in children....ab-1494
lipocaic for....1454
protamine zinc insulin in....ab-1486
vitamin B for....ab-1486
Diathesis, hemorrhagic, of newborn; vitamin K for....*1416
Elephantiasis after removing breast cancer.1477
Encephalitis, Epidemic, belladonna for..ab-1489
Eosinophilia with gastrointestinal symptoms.1477
Erben's test for nerve balance....*1423
Erythrocyte count and hemoglobin estimation.1477
European War and medical students...SS-1499
bombing London hospitals....1469
climatic adaptation of soldiers....*1422
effects of bombs on lungs....ab-1492
empty beds in war hospitals....1469
four physicians killed in air raids....1469
volunteer surgical unit reaches England.1469
Evidence: complaints of patients....Ml-1482
Fatigue, gelatin or amino-acetic acid use in.*1439
Fellowship, Lawrason Brown Memorial....1468
Sigmund Freud Memorial....1468
Fenger, Christian, centenary....1565
Fever, mechanical vs. malarial, in syphilis.1477
Food allergy with eosinophilia....1477
Foreign Letters....1469
Fractures, decubitus in....*1438
Gallstone operation (first) by Dr. Bobbs.SS-1505
Gas warfare, combating ill effects....*1448
Gastrointestinal Tract disorders, vitamin B.1476
symptoms with eosinophilia....1477
Gelatin and muscular fatigue....*1439
Government Services....1468
Guy's Hospital Reports, Hurst Number..E-1458
Gynecology, Pacific Coast Society....1468
Hair-setting fluid: karaya allergy....ab-1491
Harvard's national scholarships....SS-1506
Harvey, Verne K., resigns....1465
Health agencies aid in mobilizing National Guard....*1459
Cleveland Museum of....E-1457
public, advancement and the World War.*1448
Texas Association....1468
Heart disease in physicians....*1495
Roger's disease....ab-1494
Hemoglobin, normal estimations....1477
Hemorrhage of newborn; vitamin K for..*1416
serum and plasma for....ab-1492
Hospitals care of Negro patients....OS-1461
bequests and donations....1468
London, bombing of....1469
Memorial, dedicated, N. C....1467
Michael Reese, hematologic service at....1465
Pontiac Motor Co....1466
war, empty beds in....1469
Hurst, Arthur F., honored....E-1458
Industrial cancer in oil refinery workers.ab-1490
health symposium, Mich....1466
hospital at Pontiac Motor Co....1466
hygiene division, Mont....1466
National Committee for the Conservation of Manpower....1460
Infants, newborn, allergic bleeding....ab-1485
newborn, hemorrhagic diathesis....*1416
Infection, penicillin for....ab-1493
adrenal cortex extract and salt for....ab-1487
Influenza, pandemic of 1918....SS-1505
Intestines, hemorrhage (allergic)....ab-1485
obstruction, management....*1411
Jefferson Medical College....SS-1506; SS-1507
Karaya allergy from hair-setting fluid..ab-1491
Kettle Lecture....SS-1502
Kidneys in lupus erythematosus....ab-1485
Knox's Gelatin and muscular fatigue....*1439
Lancet, Student's Guide....SS-1499
Lipocaic, Dragstedt's....1454
Lipolysin, Wolffe's....1454
Long (Leroy) Lectureship....SS-1508
Lungs, effects of explosive blast....ab-1492
Lupus erythematosus (disseminated), renal involvement in....ab-1485
McCrae, John, death of poet....SS-1507
Marriages....1469
Medical Education, integration....SS-1504
graduate day, Toledo....1467
intramural graduate, in obstetrics and pediatrics....*1436
Western Reserve changes curriculum..SS-1506
Medical Examinations and Licensure....1478
Medical Practice Acts: injunctions; to restrain violations....Ml-1482
Medical Preparedness....1459
Medical Service, Michigan....OS-1463
vs. auto in family budget....E-1458
Western New York Medical Plan, Inc..*1461
Medical Supplies standardized in World War....*1449
Medicine, place of pathology....SS-1502
progress, World War contributions....*1443
Medicolegal Abstracts....1482
Meetings, Coming Meetings....1482
Michigan Medical Service....OS-1463
Military service and medical practice....1460
training, Cornell students elect....SS-1506
preparedness and climate....*1421
Milk allergy, intestinal bleeding in newborn....ab-1485
Mineral metabolism and banana intake..ab-1483
Muck test for endocrine imbalance....*1423
Muscles, work of, gelatin or amino-acetic acid fail to increase....*1439
Musical medical society....SS-1508
Myasthenia gravis; implant desoxycorticosterone acetate pellets....C-1475
National Committee for Conservation of Manpower in Defense Industries....1460
Guard regiment, physical examination..*1459
Health Council new address....1468
Negro patients, hospitalization....OS-1461
Neurosyphilis, fever therapy....1477
New York Post-Graduate Medical School..1467
News....1465
Nitrogen metabolism and banana intake..ab-1483
Northwestern, "living high" at....SS-1507
Obstetrics, intramural graduate courses...*1436
Pacific Coast Society....1468
Oil refining workers, cancer in....ab-1490
Ophthalmology, Pan American Congress..1468
Organization Section....1461
Oxyuriasis, epidemiology....ab-1490
in North Carolina....ab-1491
Pancreas extracts (insulin-free)....1454
hyperinsulinism, causes of....1476
remove adenomas for hyperinsulinism.ab-1494
Pathology, place in medical sciences...SS-1502
Pediatrics, intramural graduate course...*1436
Penicillin, clinical use....ab-1493
Peptic Ulcer, hemorrhage in, Meulengracht regimen....ab-1483
hemorrhage (massive) in, treatment...ab-1491
Perkins, F. P., in military service....1465
Philadelphia County Society: military service and medical practice....1460
Physical Examination of National Guard.*1459
Physicians called to military service, protecting practice of....1460
himself....*1495
killed in London air raids....1469
positions open for....1468
Plant, J. S., Rachford Lectures by....1467
Pneumoconiosis, tuberculosilicosis....ab-1488
Pneumonia, adrenal cortex extract and salt for....ab-1487
Poliomyelitis, National Foundation....1466
Pregnancy rate for contraception practice.*1451
Prizes at Temple....SS-1508
at Tulane....SS-1507
Sedgwick medal, posthumous award....1468
Queries and Minor Notes....1476
Rachford Memorial Lectures by Dr. Plant.1467
Radiology, refresher series on....1468
Respiratory Tract infection, asthmatic bronchitis after....*1434
Richmond, J. L., first cesarean section..SS-1505
Richmond Academy lectures....1468
Scarlet Fever, sulfanilamide and/or antitoxin for....ab-1484
Scholarships, Columbia awards 100....SS-1508
Harvard's....SS-1506
Schools, Medical, changes forced on, by war, England....SS-1499
Silver nitrate for decubitus....*1438
Society Proceedings....1482
Spermatogenesis, testicular biopsy....*1429
number, testosterone injection effect on.*1424
Spotted Fever in Pennsylvania....*1441
"Staining" antiseptics, action....1476
Staphylococcus infections, sulfathiazole locally for....ab-1488
State Board Examinations....1478
State Board questions, Pa....SS-1508
Sterility in male....*1424
nature of....*1426
testicular biopsy....*1429
Student Section....1495
Students, alien, must register....SS-1506
Students, Medical, and the war....SS-1499
Sulfanilamide treatment of scarlet fever.ab-1484
Sulfathiazole locally for infections....ab-1488
Surgery, progress and World War....*1444
Temple University....1467; SS-1508
Testis, biopsy; value in sterility....*1429
Tetanus, fever therapy....ab-1488
Tissue, coral grow in?....1477
Tonics and Sedatives....Adv. page 30
Tuberculosis in young infants....ab-1493
in National Guard regiment, N. H....*1459
National Tuberculosis Association new address....1468
pulmonary, in recruits; microradiographic survey....ab-1492
Tulane....SS-1507; SS-1508
University of California....SS-1506
of Chicago....1465
of Georgia....SS-1507
of Illinois musical medical society...SS-1508
of Texas....SS-1508
of Virginia....SS-1506
Vertigo, symposium on....1467
Vitamin B therapy in diabetes....ab-1486
B_1 therapy in heart and stomach disorders....1476
B_1 in blood....ab-1494
K in hemorrhage of newborn....*1416
Washington University, 25 years old...SS-1501
West Virginia School of Medicine....SS-1506
Western New York Medical Plan, Inc....*1461
Reserve changes curriculum....SS-1506
Wolffe's Lipolysin....1454
Woman's Auxiliary....1464
World War and medical progress....*1443
Zinsser, H., Sedgwick Medal award....1468

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THE MANAGEMENT OF INTESTINAL OBSTRUCTION

AN EVALUATION OF CONSERVATIVE THERAPY

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AND
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Nonoperative or conservative treatment of intestinal obstruction often leads to favorable and dramatic results. Because some authorities have stated that intestinal obstruction is invariably a surgical condition, we have felt it perhaps worth while to review the cases of intestinal obstruction encountered in the past year and to consider critically the value of conservative treatment.

The majority of reports that deal with nonsurgical decompression are concerned with acute obstruction of the small intestine. This study consists of the results obtained from treatment in cases of intestinal obstruction encountered at the Mayo Clinic from Aug. 1, 1938, to July 31, 1939, inclusive. All types of obstruction are included, acute, chronic, simple and strangulated, in both the large and the small bowel. Our chief purpose in this review is to obtain a broader and more inclusive evaluation of the role of conservative therapy.

Since the advent of aseptic surgery there have been two major advances in the treatment of intestinal obstruction: the demonstration of the value of parenterally administered fluids by the work of Hartwell and Hoguet,[1] MacCallum,[2] Haden and Orr,[3] Dixon,[4] Gamble and Ross,[5] and the discovery of a method for decompressing the distended intestine by oral or nasal intubation as elaborated in the writings of Westermann,[6] Ward,[7] Wangensteen,[8] Miller,[9] Abbott,[10] Johnston [11] and others.[12] Aside from the inherent worth of these two therapeutic measures, their study and development have led to a better understanding of the problem of intestinal obstruction. The application of these principles together with the development of improvements in surgical technic has led in our experience to a great reduction of the mortality rate, which was formerly appallingly high.

The relative success of present day methods of dealing with intestinal obstruction as compared with the results of a decade or more ago is apparent in the mortality statistics of most large hospital services, such as those reported by vanBeuren and Smith,[13] Scudder, Zwemer and Whipple,[14] Kennedy and Hanson [15] and others, and from the observations of other surgeons who have observed the transition.[16]

MATERIAL

The work at hand embraced a study of the patients, hospitalized during a period of one year beginning Aug. 1, 1938, who were found to have objective clinical evidence of intestinal obstruction at the time of admission or shortly thereafter. Cases of ileus attributable to operative procedures carried out during the patients' stay in the hospital were not included in this study. Patients who gave a history of obstructive episodes but did not present objective evidence of intestinal obstruction or patients whose only objective evidence of intestinal obstruction was found at operation were not included in this series. Obstructions situated proximal to the jejunum were omitted from this analysis.

METHOD OF STUDY

All cases were divided into two main groups, after the method of Wangensteen,[17] simple obstructions and

From the Division of Medicine (Dr. Bargen) and the Division of Surgery (Dr. Dixon), the Mayo Clinic.

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strangulation obstructions. There were 133 of the former and thirty-three of the latter, a total of 166 cases. In table 1 the cases of obstruction are classified according to their etiology. The most common single cause of simple obstruction was carcinoma of the sigmoid or rectosigmoid; postoperative adhesions occupied second place. The indeterminate group included

TABLE 1.—*Classification of Cases of Obstruction on the Basis of Etiology*

I. Simple obstruction	
A. Mechanical	
1. Narrowing of lumen	
a. Stricture (inflammatory, traumatic and neoplastic)	97
b. Obturation (gallstone)	1
c. Compression (ileal cyst, mesenteric tumor)	2
d. Bands and adhesions	22
B. Nervous imbalance	
1. Adynamic (carcinoma of cervix with peritonitis)	1
C. Indeterminate	10
II. Strangulation obstruction	
A. Mechanical	
1. Hernia (external and internal)	17
2. Volvulus	8
3. Intussusception	5
4. Bands and adhesions	2
B. Vascular (mesenteric thrombosis)	1

cases in which there was thought to be a large functional element, cases in which, because of recovery without operation, the true cause was never determined, and three cases of the so-called enterorenal syndrome.[18] Among the strangulation obstructions, inguinal hernia was the most common cause.

SIMPLE OBSTRUCTION

In table 2 the cases are classified according to the segment of bowel involved. We have divided these into three groups: cases in which the small bowel was the site of obstruction, cases in which the large bowel was obstructed and, finally, cases in which the whole intestine was distended because of adynamic ileus or in which the true nature and level of obstruction was not accurately determined.

Simple obstructions are customarily further classified as acute or chronic, complete or incomplete and early or late. However, as Morton[19] has pointed out, the most important single factor in determining what treatment should be employed and what the outcome is likely to be is the general condition of the patient at the time of observation. This is the resultant of all other factors. In this study we have graded all simple obstructions as of high, medium or low grade. This grading was arbitrary, independent of the site of obstruction and determined on the basis of (1) the degree of distention, (2) the amount, duration and character of vomiting, (3) the duration and degree of obstipation, (4) the evidence obtained from a simple roentgenogram of the abdomen, (5) alterations in the blood chemistry and (6) the amount of colic and the character of peristalsis. Table 2 further indicates the incidence of the various grades of obstruction in the small bowel group, in the large bowel group and in the miscellaneous group.

MODE OF ONSET OF SYMPTOMS

The onset of symptoms tended to be acute or subacute in obstructions of the small bowel, whereas with obstructions of the large bowel there was a greater tendency to chronicity. In all groups the obstructions of high grade were more likely to be associated with an acute or subacute onset than were the obstructions of low grade, in which the symptoms tended to be chronic or intermittent.

DURATION OF SYMPTOMS

The duration of symptoms ranged from a few hours to one or two years. The duration of certain symptoms was taken into consideration in determining the grade of obstruction. The duration of an acute attack could not always be correlated with the grade of obstruction: the duration of a chronic attack seldom could be so correlated.

DISTENTION

The degree of distention present, in general, corresponded with the grade which was assigned to the obstruction. The distention tended to be greater when associated with obstructions of the large bowel than with obstructions of the small bowel.

OBSTIPATION

The extent to which the bowels were "locked" to passages of fecal material varied considerably. In some of the obstructions of high grade a paradoxical diarrhea was present. In some of the chronic obstructions of low grade, days had passed without normal evacuation.

VOMITING

Vomiting was a prominent symptom in all groups but it occurred more commonly with obstructions of the small bowel (77.8 per cent) than with those of the large bowel (60.5 per cent). Fecal vomiting occurred with four of the high grade obstructions of the small bowel and with four of the high grade obstructions of the large bowel. Fecal vomiting occurred in one of the cases of low grade colonic obstruction as a result of the presence of a gastrojejunocolic fistula.

BLOOD CHEMISTRY

The increased tendency for vomiting to occur with obstruction of the small bowel was reflected in the greater incidence of alterations in the blood chemistry in this group. Abnormal values for blood urea, chloride or carbon dioxide combining power were noted in 62.5 per cent of the obstructions of the small bowel and in

TABLE 2.—*Simple Obstructions*

Obstruction		Cases, Number and Percentage	Percentage of Total (133 Cases)
Site	Grade		
Small bowel.....	High.....	17 (37.8)	
	Medium.....	12 (26.7)	
	Low.....	16 (35.6)	
		45	33.8
Large bowel.....	High.....	32 (42.1)	
	Medium.....	23 (30.3)	
	Low.....	21 (27.6)	
		76	57.1
Miscellaneous....	High.....	4 (33.3)	
	Medium.....	3 (25.0)	
	Low.....	5 (41.7)	
		12	9.0

50.9 per cent of the obstructions of the large bowel. That vomiting was not the only factor concerned was indicated in the preponderance of cases of acidosis over cases of alkalosis. Our observations were in accord with those of Falconer,[20] who pointed out that the most constant change and the one which gives the best index of the true condition of the patient is the elevation of the blood urea resulting from the increased metabolism of endogenous protein which occurs in the

18. Wakefield, E. G.; Mayo, C. W., and Bargen, J. A.: Ileus Associated with Transient Renal Insufficiency: A True Enterorenal Syndrome, J. A. M. A. **104**: 2235-2239 (June 22) 1935.

19. Morton, J. J.: Factors Determining the Selection of Operation in Obstruction of the Small Intestine, Surgery **1**: 848-858 (June) 1937.

20. Falconer, M. A.: Clinical Aspects of the Blood Chemistry in Intestinal Obstruction, Proc. Staff Meet., Mayo Clin. **13**: 460-464 (July 20) 1938.

presence of intestinal obstruction. This elevation varied directly with the grade of obstruction. The loss of chloride varied with the amount of vomiting. The level of the carbon dioxide combining power, as Falconer pointed out, was variable but in general in the presence of decreased chlorides it was elevated (alkalosis) and in the presence of normal values for chloride it was normal or decreased (acidosis). Under the influence of satisfactory treatment, whether conservative or surgical, the blood chemical values returned to normal, the urea usually more slowly than the other values.

PRECIPITATING FACTORS

The optimal time for operating on patients who have intestinal obstruction is in the interval between attacks in recurrent cases or, in any case, before the obstruction has become high grade in character. Accordingly, a search was made to determine if there were any factors responsible for the recurrence of attacks of obstruction or the exacerbation of attacks already in progress which could be avoided. It was found that six bouts of obstruction of the small bowel and nine bouts of obstruction of the large bowel had unquestionably been precipitated by the oral administration of barium sulfate for roentgenologic study. In four additional cases, barium sulfate had been given but the responsibility did not fall clearly on it. In two cases of obstruction of the large bowel and in one case in the miscellaneous group, bouts of obstruction followed the introduction of barium sulfate into the rectum. In one additional case the inability to recover adequately the barium thus administered might have played a role. Barium was not the only offender. Three attacks of small bowel obstruction and one of large bowel obstruction came on the heels of a strong purgative administered to prepare the patient for subsequent roentgenologic study.

Thus, in 133 cases of simple obstruction, the precipitation of an attack of obstruction in twenty-two cases (16.5 per cent) was caused by the administration of barium sulfate or too violent purgation and in an additional five cases (3.8 per cent) the barium seemed to be a factor in precipitating an obstruction. The hospital mortality of these twenty-seven cases was 33 per cent. Wangensteen [17] has long emphasized the disasters which may follow the incomplete taking of a history, perfunctory physical examinations and too great dependence on laboratory data in cases of intestinal obstruction. Nowhere is this more clearly demonstrated than in these cases in which impaction of barium caused obstruction, cases seen with appalling frequency in spite of the repeated warnings of Dixon,[21] Vernon David [22] and others.

CONSERVATIVE THERAPY

All food and liquid orally is withheld in cases of obstruction of high grade. A "residue-free" diet (Bargen and Sister Victor [23]) is permitted in the cases of low grade obstruction. Sedatives and antispasmodics are administered when it is felt that there is no danger of masking signs of impending perforation. Hot stupes are found to add materially to the comfort of patients. Rectal irrigations with warm physiologic solution of sodium chloride have proved especially valuable for obstruction of the large bowel. When the condition of the patient permits, these irrigations are administered with the patient in the knee-chest position. By using this method, we have been able to relieve many obstructions of the large bowel after numerous unsuccessful attempts had been made by the use of ordinary enemas before the patient was admitted to the hospital. Cautious purgation with small doses of a saline laxative is employed in cases in which the obstruction is not complete. Balances of fluids and electrolytes are carefully maintained by the accurate charting of fluid intake and output and frequent blood chemistry determinations (urea, chlorides, carbon dioxide combining power). Intubation of the stomach or duodenum with continuous suction applied to the tube is employed in most obstructions of high grade and many of those of medium grade.

The Sawyer-Willson modification of the Miller-Abbott [9] tube was used instead of the duodenal tube in a number of the cases of this series. Our experience with the tube in this group of cases is indicated in table 3. There was some difficulty in passing the tube in more than a third of the cases; either because of lack of cooperation on the part of the patient or because of extreme distention or other factors, several attempts were required to get the tube beyond the pylorus. In a few cases the tube never went beyond the stomach. In designating "function of the tube satisfactory" it is meant that the tube descended into the small intestine and drained intestinal content. In most cases of obstruction of the small bowel in which this occurred the final results of conservative therapy were satisfactory, but in a few cases, although the tube worked well, decompression was not accomplished. In one case this was found at operation to be due to complete obstruction of the lower portion of the ileum by a coiled tube. Unsatisfactory function of the tube signifies its failure to leave the stomach or plugging of the tube after it is in place. In a few cases the final results of conservative therapy were good in spite of a malfunctioning tube. In the group of cases of obstruction of the large bowel there is seen to be a marked discrepancy between the function of the tube and the final results. This can be explained by the fact that in only two of these cases did the tube pass into the colon. In the remainder the ileocecal valve prevented the tube from emptying the colon, although the tube might be the means of achieving satisfactory decompression of the small bowel proximal to the colon. The latter observation is in keeping with the observations of Johnston,[11] who found the entry of the tube into the colon too uncertain and slow to be dependable. However, by preventing the ingress of further material from the small bowel into the distended large bowel, the tube no doubt was a valuable aid in the cases in which decompression of the large bowel was satisfactory.

In one instance the tube became coiled in the lower portion of the ileum causing complete obstruction and,

TABLE 3.—*Intestinal Intubation*

Site of Obstruction	Number of Cases	Tube Used	Passage of Tube Difficult	Function of Tube: Satisfactory	Function of Tube: Unsatisfactory	Final Results of Conservative Therapy: Satisfactory	Final Results of Conservative Therapy: Unsatisfactory
Small bowel	45	16	7 (43.8%)	12 (75.0%)	4 (25.0%)	12 (75.0%)	4 (25.0%)
Large bowel	76	20	6 (30.0%)	14 (70.0%)	6 (30.0%)	11 (55.0%)	9 (45.0%)
Miscellaneous	12	3	2 (66.7%)	2 (66.7%)	1 (33.3%)	3 (100%)	0
Total	133	39	15 (38.5%)	28 (71.8%)	11 (28.2%)	26 (66.7%)	13 (33.3%)

21. Dixon, C. F., and Deuterman, J. L.: Acute Intestinal Obstruction, S. Clin. North America **17**: 983-993 (Aug.) 1937.
22. David, V. C.: Chronic Intestinal Obstruction Due to Lesions of the Large Bowel, Surg., Gynec. & Obst. **64**: 281-286 (Feb. 15) 1937.
23. Bargen, J. A., and Victor, Sister Mary: Diet in Intestinal Disorders, J. A. M. A. **97**: 151-153 (July 18) 1931.

in another, there occurred collapse and general peritonitis soon after partial withdrawal of a tube the balloon of which could not be deflated.

High concentrations of oxygen, as recommended by Fine,[24] have been used in a few cases. In one case such treatment was attended by spectacular success but in a number of others it seemed to be without effect even though augmented by the more customary measures.

GENERAL RESULTS OF CONSERVATIVE THERAPY

The final results of conservative therapy at the time of its termination by operation, discharge or death are indicated in table 4. These were the clinical results and in most cases represented the opinion of the clinician in charge of the case and were not based on observations at operation or at necropsy. It will be seen that the results were satisfactory in the majority of

TABLE 4.—*Immediate Results of Conservative Treatment in Cases of Simple Obstruction*

Obstruction		Number of Cases	Benefited		Not Benefited		
Site	Grade		Complete Relief, Number and Percentage	Partial Relief, Number and Percentage	No Relief, Number and Percentage	Condition Worse, Number and Percentage	No Treatment, Number and Percentage
Small bowel	High	17	7 (41.2)	4 (23.5)	3 (17.6)	3 (17.6)	..
	Medium	12	7 (58.3)	3 (25.0)	1 (8.3)	1 (8.3)	..
	Low	16	9 (56.3)	3 (18.8)	2 (12.5)	2 (12.5)	..
		45	23 (51.1)	10 (22.2)	6 (13.3)	6 (13.3)	..
Large bowel	High	32	11 (34.4)	4 (12.5)	6 (18.8)	10 (31.3)	1 (3.1)
	Medium	23	11 (47.8)	7 (30.4)	2 (8.7)	3 (13.0)	0
	Low	21	12 (57.1)	7 (33.3)	2 (9.5)	0	0
		76	34 (44.7)	18 (23.7)	10 (13.2)	13 (17.1)	1 (1.3)
Miscellaneous	High	4	3 (75.0)	1 (25.0)	..	..	..
	Medium	3	0	3 (100.0)	..	..	..
	Low	5	3 (60.0)	2 (40.0)	..	..	..
		12	6 (50.0)	6 (50.0)	..	..	..

cases of obstruction of the small bowel. The distribution of results was uniform in each of the three groups of cases of obstruction of the small bowel. In all cases in the miscellaneous group, benefit was derived. When we turn to the group of cases of obstruction of the large bowel, however, a striking contrast presents itself. The majority of the patients having obstructions of medium and of low grade were benefited; in fact, in a sizable proportion of these cases complete clinical relief was experienced. But, in the group of obstructions of high grade, more patients were unaffected by or actually harmed by the employment of conservative measures than were benefited. This, of course, is the group in which, because of a competent ileocecal valve and an obstructing lesion, one is dealing with what is essentially a closed loop.[25] It is the group against which warnings have been sent out by even the warmest advocates of conservative measures. Yet, at the same time, it is the group with which, because of the very poor condition of the patient or the very good condition of the patient, one is most sorely tempted to temporize, although fully aware of the seriousness of the situation. It is hoped that this numerical demonstration of the fallacy of attempting conservative measures for high grades of colonic obstruction will serve to emphasize the importance of very careful continued observation in these cases and the employment of surgical intervention at the proper time. The proper time for operation may be at the moment when a patient is first seen, if the site of obstruction can be determined, or as soon thereafter as possible if no improvement is noted in the early hours of observation.

An interesting commentary on the results of conservative therapy is the fact that, in a group of forty-six cases in which complete relief of all signs and symptoms of obstruction occurred clinically and in which operation was then performed, twelve patients still exhibited marked distention of the bowel when the abdomen was opened. This should serve as a reminder to those who advocate radical operations in cases of recent obstruction that even in the face of complete clinical relief one is still not dealing with a normal bowel.

Complications Attending Conservative Decompression.—In the group of cases of obstruction of the small bowel, bronchopneumonia developed in one case and localized peritonitis developed in another, owing to a perforating type of lesion during the administration of conservative treatment. Serious complications were much more common in the group of cases of obstruction of the large bowel. Two patients experienced bronchopneumonia and five patients had localized peritonitis caused by subacute perforations of tumors or of the bowel proximal to the point of obstruction. General peritonitis occurred in six cases because of perforation of the colon proximal to an obstructing lesion and in one case because of the infection of ascitic fluid. In the miscellaneous group, pneumonia developed in one case. The fact that serious complications are limited almost exclusively to the group of cases of obstruction of the large bowel serves further to emphasize the hazards of temporization in dealing with grave obstruction of the colon. It is, of course, entirely possible that these complications may be the immediate results of the serious basic pathologic condition itself rather than the result of the attempt to relieve its symptoms.

OPERATIVE PROCEDURES

In the group of obstructions of the small bowel, emergency decompression by surgical methods was required in eight cases. In six cases ileostomy was performed; in one, ileostomy and colostomy were performed and in one an impacted gallstone was removed from the ileum; two of these patients died. In five cases no operation was performed because of complete relief of the obstruction by conservative methods. In one case operation was deferred because of the poor condition of the patient. In the remaining thirty-one cases, elective surgical procedures were performed. Obstructing bands or adhesions were released in ten cases, short-circuiting or decompressive procedures being added in four cases. No deaths followed these operations. Short-circuiting procedures were carried out in thirteen cases with two deaths. Resection of obstructing segments of bowel were carried out in five cases with one death. Three patients who had merely exploratory laparotomy died because of associated pathologic conditions. The group mortality for the

24. Fine, Jacob; Banks, B. M., and Hermanson, Louis: The Treatment of Gaseous Distention of the Intestine by the Inhalation of 95 Per Cent Oxygen: Description of an Apparatus for the Clinical Administration of High Oxygen Mixtures, Ann. Surg. **103**: 375-387 (March) 1936.

25. Dixon, C. F.: Single and Closed Loop Intestinal Obstruction, Proc. Staff Meet., Mayo Clin. **11**: 462-463 (July 15) 1936. Wangensteen.[17] Wangensteen, Rea, Smith and Schwyzer.[26]

thirty-nine cases in which operation was performed was 20.5 per cent.

In the group of obstructions of the large bowel, proximal surgical decompression was carried out in fifty cases, in thirteen of which the obstructing lesion was exteriorized at the same time. Eleven of these patients died. Short-circuiting procedures were carried out in two cases with two deaths. Exteriorization of the obstructed region was carried out in four cases without a death. Resection of obstructed segments with anastomosis of the bowel was carried out in three cases without a death. Exploratory laparotomy alone was carried out for one patient, who survived. The group mortality for the sixty cases in which operation was performed was 21.7 per cent. In sixteen cases in the group of obstructions of the large bowel operation was not performed: in seven because of relief of symptoms by conservative measures, in four because of the poor condition of the patient, and in five because death occurred before operation was performed.

In the group of cases of miscellaneous obstruction, exploration was carried out in one case. In eleven cases no operation was performed because of relief of symptoms by conservative measures. There were no deaths in this group.

With the exception of two cases in the group of large bowel obstruction and one case in the group of small bowel obstruction, all operative deaths occurred among individuals whose obstruction was of a high grade.

Secondary operations were carried out mainly among the patients who had had obstructions of the large bowel. Thirty-six operations were performed with a mortality of 8.3 per cent. Two patients who had obstruction of the small bowel survived secondary operations.

GROSS MORTALITY

The figures for gross mortality are presented in table 5. There were 133 cases with twenty-nine deaths, a mortality rate of 21.8 per cent. The mortality rate was 0 in the miscellaneous group, 17.8 per cent in the small bowel group and 27.6 per cent in the large bowel group. The mortality rate was directly proportional to the grade of obstruction in the large and small bowel groups, being highest, as would be expected, in the group of cases in which obstruction of high grade was present.

CAUSE OF DEATH

Peritonitis was the most common cause of death, being responsible for the demise of four patients who had obstruction of the small bowel and thirteen who had obstruction of the large bowel. Six patients with obstruction of the large bowel died of pneumonia, one of gastrointestinal hemorrhage and one of pulmonary edema. Two patients with obstruction of the small bowel died of carcinomatosis; one of ileus and one of pulmonary edema. None of the patients in the miscellaneous group died.

Comments on Simple Obstructions.—It has been demonstrated that conservative measures greatly improve the general condition of most patients who have intestinal obstruction. In certain cases conservative treatment obviates the need for surgical measures. The one group consistently resistant to these salutary effects is the group of patients with high grade obstructions of the large bowel.

Intubation is an invaluable agent in the treatment of obstructions of the small bowel and is a helpful adjunct to the treatment of obstructions of the large bowel.

Irrigations find their greatest value in the treatment of obstructions of the distal half of the colon.

Fluid and electrolyte balances can be maintained by the intelligent administration of fluids parenterally.

The time required for successful conservative therapy is relatively unimportant.

The time element assumes major importance when conservative therapy is not progressing satisfactorily. As Wangensteen [26] has pointed out, the longer conservative therapy is continued the greater the hazard to the patient if it fails. No arbitrary time limit can be stated for the use of conservative therapy.

For obstructions of low grade the amount of time spent with conservative measures is optional.

For high grade obstructions of the small bowel, operation should not be deferred if there is no improvement from conservative measures after twelve to twenty-four hours.

In cases of high grade obstructions of the large bowel, which are essentially closed loop obstructions, conservative temporization is extremely hazardous. The condition of the patient may be improved by gastric lavage, administration of fluids parenterally and of sedatives, but operation cannot safely be deferred.

In all cases of obstruction, if the condition of the patient becomes worse rather than better under conservative therapy, immediate operation should be performed.

TABLE 5.—*Simple Obstructions; Mortality*

Obstruction		Number of Cases	All Hospital Deaths, Number and Percentage	Postoperative, Number and Percentage	After Second Operation, Number and Percentage	Without Operation, Number and Percentage
Site	Grade					
Small bowel	High	17	7 (41.2)	7 (41.2)	0	0
	Medium	12	1 (8.3)	1 (8.3)	0	0
	Low	16	0	0	0	0
		45	8 (17.8)	8 (17.8)	0	0
Large bowel	High	32	16 (50.0)	11 (34.4)	2 (6.3)	3 (9.4)
	Medium	23	3 (13.0)	1 (4.3)	0	2 (8.7)
	Low	21	2 (9.5)	1 (4.8)	1 (4.8)	0
		76	21 (27.6)	13 (17.1)	3 (3.9)	5 (6.6)
Miscellaneous	High	4	0	..	..	..
	Medium	3	0	..	..	..
	Low	5	0	..	..	..
		12	0			
Total cases		133				
Total deaths			29 (21.8)			

STRANGULATION OBSTRUCTIONS

Since attempts at conservative decompression have no place in the treatment of obstructions due to strangulation, with the possible exception of occasional cases of volvulus or intussusception prior to the development of gangrene, the treatment and results in this group of cases will be given only brief consideration.

There were thirty-three patients. All were subjected to operation. There were eight deaths, making a group mortality of 24.2 per cent.

26. Wangensteen, O. H.; Rea, C. E.; Smith, B. A., Jr., and Schwyzer, H. C.: Experiences with Employment of Suction in the Treatment of Acute Intestinal Obstruction; A Reiteration of the Indications, Contraindications and Limitations of the Method, Surg., Gynec. & Obst. **68**: 851-868 (May) 1939.

Time of Operation.—Immediate operation was carried out in twenty-four cases with a mortality of 20.8 per cent. Operation was delayed six hours or more in nine cases. The operative mortality in this group was 33⅓ per cent.

Condition of Strangulated Loop.—The strangulated loop was found viable at operation in twenty-three cases, in 8.7 per cent of which death occurred. The viability of the strangulated loop was questionable in one case. This patient died. The strangulated loop was gangrenous in nine cases; five (55.6 per cent) of these patients died.

Relation of Condition of Loop to Time of Operation.—Among the twenty-four patients who were subjected to immediate operation, the strangulated loop was found at operation to be viable in seventeen cases (70.8 per cent) and gangrenous in seven (29.2 per cent). Among the nine cases in which operation was delayed six hours or more, the strangulated loop was viable in six cases (66.7 per cent), gangrenous in two cases (22.2 per cent) and questional in one case (11.1 per cent).

Treatment.—The type of operation performed depended on the condition of the strangulated loop. In the twenty-three cases in which the loop was viable, simple relief of the obstructing mechanism was performed in seventeen cases with one death. In three cases this procedure was augmented by enterostomy as an added precaution; one of these patients died. In three cases spontaneous relief of the obstruction was found to have occurred. The one patient in whom the viability of the bowel was questionable died following reduction of a volvulus that involved the entire jejunum and a third of the ileum.

Among the cases in which the strangulated loop was gangrenous, exteriorization of the affected loop was carried out in two cases without a death. In two cases the procedure was augmented by enterostomy; one of these patients died. Resection of the strangulated loop with primary anastomosis of the bowel was carried out in four cases, with enterostomy proximal to the anastomosis. Three of these patients died. In one case, volvulus was discovered at necropsy. In most of the cases in which a hernia was present, repair was effected in the process of closing the exploratory wound.

Cause of Death.—Peritonitis was the cause of death in five cases. Surgical shock contributed to the outcome in two of these cases; pneumonia also was present in a third case. Shock alone caused two deaths. One patient died of uncomplicated pneumonia.

Comments on Obstructions Due to Strangulation.—The time element is very important in these cases. The longer operation is delayed the greater the likelihood that gangrene will develop or, if gangrene is already present, the greater the likelihood that general peritonitis will develop.

The presence or absence of gangrene determines the difficulty and extent of operation and the gravity of prognosis.

Operation should be performed in all obstructions due to strangulation as soon as the diagnosis is established in cases of external hernia or as soon as there is anything to suggest the diagnosis in cases in which there are internal lesions.

Loss of blood may be an important factor in obstructions due to strangulation, and transfusions are of great value in these cases.

SUMMARY

The results of treatment in 166 cases of intestinal obstruction were studied. This number included 133 cases of simple obstruction and thirty-three cases of strangulation obstruction. The incidence of avoidable precipitating factors to which bouts of acute obstruction could be attributed is relatively high. All patients who had simple obstruction were subjected to a period of conservative therapy for varying lengths of time before operation. In a number of cases this therapy obviated the need for surgical intervention.

The results of conservative therapy were found to be satisfactory in most cases of simple obstruction of the small bowel and of low and medium grade obstruction of the large bowel. The results of conservative therapy were distinctly unsatisfactory in high grade obstructions of the large bowel, and in certain of these cases the results were disastrous.

The recognition of high grade obstructions of the colon when they occur and the avoidance of dangerous temporization in such cases is important. The gross mortality rate for all cases of simple obstruction was 21.8 per cent. In the various groups the mortality rate was found to be directly proportional to the grade of obstruction. The treatment of the obstructions due to strangulation was strictly surgical. The mortality rate in this group was 24.2 per cent.

HEMORRHAGIC DIATHESIS OF THE NEWBORN

FURTHER OBSERVATIONS CONCERNING PREVENTION AND TREATMENT

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It has been fifteen years since Dam [1] announced the discovery of vitamin K and described its antihemorrhagic properties. In the past two years we have seen proof of the valuable properties of this newcomer to the family of vitamins in two important clinical fields, namely the hemorrhagic state associated with obstructive jaundice and the hemorrhagic diathesis of the newborn. The rapid development in the chemical synthesis of vitamin K stands out as a landmark of accomplishment in the field of biologic chemistry.

In March 1939 we [2] recorded the cases of two newborn infants both with marked prothrombin deficiency. In one infant there was in addition unnatural bleeding. To each of these infants natural vitamin K concentrate was administered orally, and within the short interval of two hours the prothrombin deficiency appeared to have been corrected and bleeding in the one instance promptly was controlled. On the basis of these few facts we suggested that vitamin K might serve a specific purpose in the prevention and treatment of hemorrhagic

The vitamin K preparations used in this study were provided through the Abbott Laboratories and E. R. Squibb & Sons.

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1. Dam, Henrik: Biochem. Ztschr. **215**: 475, 1929; **220**: 258, 1930.
2. Waddell, W. W., Jr.; Guerry, DuPont III; Bray, W. E., and Kelley, O. R.: Possible Effects of Vitamin K on Prothrombin Time and Clotting Time in Newly Born Infants, Proc. Soc. Exper. Biol. & Med. **40**: 432 (March) 1939.

disease of the newborn. In April 1939 one of us [3] described before the Society for Pediatric Research and later published in June 1939 certain additional data based on the study of ten control infants and ten K-treated infants to the effect that prothrombin deficiency and its associated bleeding were the direct result of avitaminosis K. We further stated at this time our belief that this same bleeding setup was perhaps present at birth and might in fact be responsible for certain cases of birth injury, particularly in those cases in which symptoms and signs of intracranial hemorrhage were late in developing. We suggested that, if prothrombin deficiency in the infant could be prevented by oral or parenteral administration of vitamin K to the mother, birth accidents might be materially lessened.

Over a period of one year we have made 2,232 prothrombin time and clotting time determinations on 191 control and 181 K-treated infants. These data have all been published or accepted for publication.[4] We have further recorded additional cases of unnatural bleeding associated with hypoprothrombinemia, including that of hemorrhagic disease. Observations similar to ours have subsequently been reported by others working along identical lines.[5] These additional data have verified in general the observations and therapeutic suggestions contained in our preliminary reports. The necessity of conserving space does not permit us to review again the fast accumulating data on this subject.

Our purpose in this article is to record additional facts of a laboratory, clinical and statistical nature concerning the hemorrhagic diathesis of the newborn and birth injury.

All prothrombin times were done by the Bray modification of Quick's method, which permits the use of capillary blood. Thromboplastin samples were prepared with acetone and all readings between fifteen and twenty-five seconds were considered as normal.

The top curve in chart 1 shows the average prothrombin time of 189 controls on admission at the end of twenty-four, forty-eight, seventy-two, ninety-six and 144 hours. It will be seen that the period of most marked deficiency occurred at the age of forty-eight and seventy-two hours. Of the 189 control cases, 111 showed some degree of prothrombin deficiency. In certain instances prothrombin deficiency was actually present in cord blood or shortly after birth.

The lower curve in chart 1 shows a similar prothrombin average for twenty-three premature infants. In this short series prothrombin deficiency was less apparent than that of the full term infants. A forty-eight hour peak is apparent also in this group of infants.

Chart 2 shows the correlation between prothrombin time and clotting time of the blood in nineteen consecutive cases observed in March 1940. All clotting times were done by the capillary tube method. This correlation has been constant throughout the entire study. As the prothrombin time rises and falls so does the clotting time.

We have on one previous occasion called attention to an apparent seasonal variation of the incidence of prothrombin deficiency in the newborn. That such a seasonal variation does occur is evident from the facts described in chart 3. The highest prothrombin time encountered in each of 191 consecutive control cases was ascertained and the average prothrombin time for each calendar month is shown in the top curve. The same results in a series of 189 consecutive treated cases are shown in the lower curve. The break in the curves for the months of April and May mark a necessary interruption in the progress of this study. The following facts are evident: 1. Prothrombin deficiency occurred with surprising frequency in the control series. 2. No such deficiency is evident in the treated series. 3. A period of marked prothrombin deficiency in the control cases occurred during the winter months, reach-

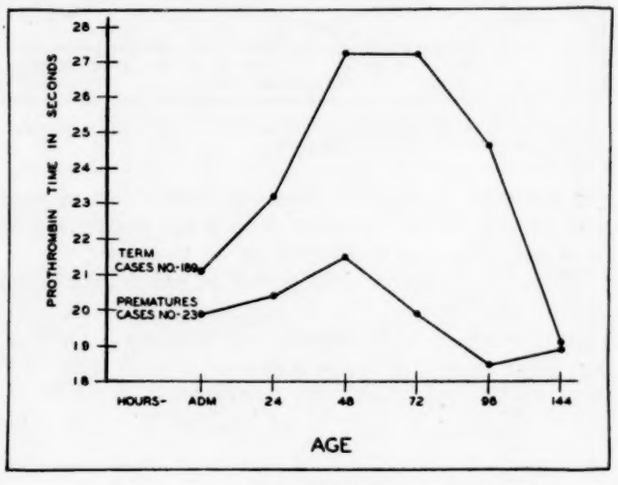

Chart 1.—Average prothrombin time of control cases.

3. Waddell, W. W., Jr., and Guerry, DuPont III: Effect of Vitamin K on the Clotting Time of the Prothrombin and the Blood, J. A. M. A. **112**: 2259-2263 (June) 1939.

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ing a peak during the month of March. 4. A lesser rise in the control series curve occurs in late August and early September. 5. No such seasonal variation occurred in the treated cases.

It seems probable that the seasonal variation in the prothrombin deficiency of the control series is the

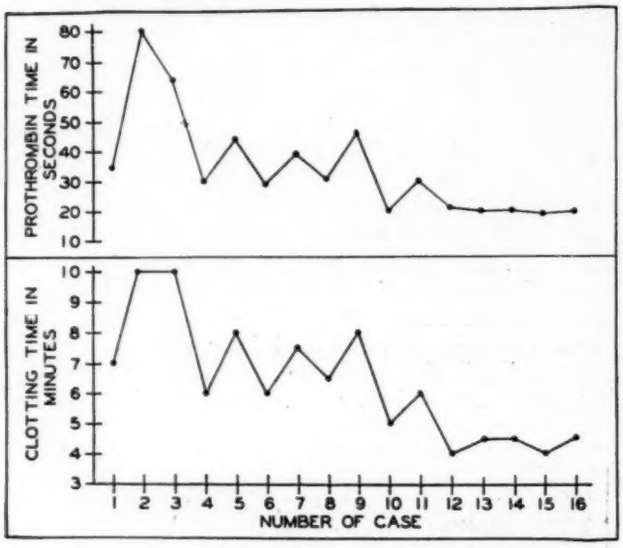

Chart 2.—Correlation between prothrombin times and clotting times in nineteen consecutive cases (March 1940).

expression of a lack of vitamin K in the diet of pregnant mothers most apparent during the winter season. It is felt that such will prove to be the case.

The obvious seasonal incidence of physiologic hypoprothrombinemia of the newborn suggests that one should be able to demonstrate a like seasonal incidence for birth injury if such accidents are in any large measure dependent on the prothrombin level of the infant's blood. A study of an inadequate series of our

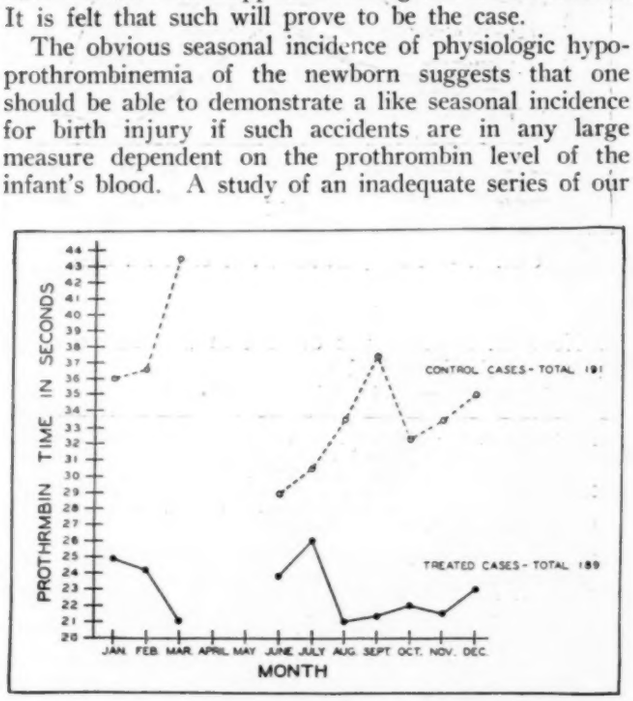
PROTHRMBIN TIME IN SECONDS
CONTROL CASES - TOTAL 191
TREATED CASES - TOTAL 189
JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MONTH

Chart 3.—Seasonal incidence of prothrombin deficiency.

own suggested such a correlation and prompted a study of the monthly death rates from birth injury for the registration area of the United States for the years 1927 to 1936 inclusive.

The death rates from birth injury (No. 160 in the International List of Causes of Death) shown in charts 4 and 5 and in table 1 were derived by dividing the total monthly deaths from this cause in the death registration area by the births for the corresponding month in the birth registration area. These two areas have covered the whole of the United States since 1933 and have, for the most part, coincided with each other during the period under consideration. The deaths from birth injury, but not the live births, were recorded from South Dakota in 1930 and 1931 and for Colorado in 1927. It is assumed that the discrepancies in these figures would not materially alter the rates as shown in the accompanying table and figures. It was further assumed that the deaths would occur in the same month in which the infants were born. This is, in some instances, incorrect but should not appreciably alter the seasonal incidence.

Curve *A* of chart 4 represents the birth injury death rate arranged according to calendar months for all deaths occurring from the fourth to the seventh day during the ten year period. It is in this curve that any seasonal incidence should be most apparent, since, in the newborn, prothrombin deficiency is more frequently observed from the second to the fourth day of life. The correlation between this curve and that describing the seasonal incidence of prothrombin deficiency of

TABLE 1.—*Specific Monthly Death Rates from Birth Injury in Infants 4-7 Days of Age 1922-1936: Rates per Hundred Thousand Live Births*

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1936	78.5	**78.7**	67.4	73.9	58.1	43.8	67.0	53.6	72.6	48.7	55.9	67.2
1935	83.3	**83.7**	75.5	82.5	72.7	51.5	62.5	55.6	58.9	56.8	60.8	66.4
1934	72.3	83.0	**85.4**	71.7	65.9	64.6	54.9	62.4	61.9	57.0	76.4	66.3
1933	69.2	89.2	**93.2**	89.9	65.8	59.1	52.5	56.1	57.3	68.2	65.1	68.0
1932	85.7	91.4	**97.5**	95.8	77.8	61.0	61.9	57.4	65.2	66.8	70.2	72.9
1931	77.3	**85.5**	80.7	76.8	70.3	71.5	67.0	58.7	76.1	65.1	71.4	71.0
1930	86.9	92.7	90.6	87.3	89.7	71.0	79.0	66.8	68.9	72.4	58.2	**101.8**
1929	90.0	82.9	**90.1**	79.1	82.1	62.8	66.3	79.1	65.4	81.9	88.1	79.1
1928	82.3	101.4	**106.7**	89.3	81.5	63.4	64.5	60.4	57.5	89.2	72.2	81.3
1927	**101.2**	93.9	90.8	87.0	86.4	80.2	81.1	65.1	74.7	85.3	63.6	78.5
Average	82.7	88.2	87.8	83.3	75.0	63.4	65.7	61.5	65.8	69.1	68.2	75.2

191 control cases (chart 3) is a striking one. The preponderance of deaths during the winter months may well be a matter of hypoprothrombinemia, and the associated hemorrhage of a slow oozing nature with symptoms and signs not obvious until several days after birth. Certainly cases presenting such a picture are frequently observed.

It is to be expected that the peak of deaths from birth injury involving hypoprothrombinemia would be delayed for one or several days following the most critical depression of the prothrombin level during life, and it is therefore not surprising that the death rate from birth injury on the fourth to the seventh day of life exhibits the most striking correlation with the seasonal curve of prothrombin deficiency. This influence may also be detected, however, although to a lesser degree, in the curves depicting the seasonal distribution of death rates for the third day and for the second week of life.

Curve *B* in chart 4 describes the birth injury death rate for all infants dying on the third day of life for the ten year period. A slight winter peak is suggested.

Curve *C* in chart 4 shows the birth injury rate for the second week of life for the ten year period.

In a previous article we suggested that vitamin K would prove of only slight benefit to those infants dying within the first twenty-four hours of life. Such deaths probably represent sudden and massive hemor-

rhage with extensive brain damage. Curve *D* in chart 5 shows the monthly death rate from birth injury for those infants dying within the first twenty-four hours of life for the ten year period. The diphasic character of the curve is apparent and the curve has no correlation with the seasonal prothrombin deficiency curve of chart 1. We have no adequate explanation for the sustained summer peak shown in curve *D* and in diminishing amplitude in other curves for the first week of life. It is certainly not a matter of prothrombin deficiency. We would have expected a curve similar to curve *E* in chart 5, which shows the specific monthly death rates from birth injury for infants dying on the second day of life for the years 1927 to 1936 inclusive.

We are fully conscious of the temptation to arrive at false conclusions from statistical studies. It must be admitted that many of the deaths included in this ten year study were not in fact birth injury deaths

TABLE 2.—*Types of Bleeding*

Untreated (219 Cases)		Treated (400 Cases)	
Types of Bleeding	No. of Cases	Types of Bleeding	No. of Cases
Bleeding from cord alone	1	Intracranial hemorrhage (no prothrombin deficiency and apparently clinically recovered on discharge from hospital)	1
Bleeding from circumcision alone	2	Cephalematoma	2
Bleeding from heel alone	7	Bloody vaginal secretion	1
Bleeding from clipped tongue frenulum alone	1		
Bleeding from mucous membranes of mouth	1		
Cephalematoma	2		
Bleeding from fontanel and heel with paralysis of face and nystagmus	1		
Bleeding from heel and clipped tongue frenulum	1		
Intracranial hemorrhage	1		
Vomiting blood and bleeding from cord and heel puncture	1		
Bleeding from scratches on face and heel puncture	1		
Massive hemothorax	1		
Intracranial injury	1		
Hemorrhagic disease of newborn	1		
Bleeding from cord and heel puncture	1		
Total	23	Total	4
	10.4%		1%

but represent deaths from unrecognized causes. Until a better explanation can be assigned we are forced, however, to the opinion that the obvious winter peak in curve *A* of chart 4 is the expression of prothrombin deficiency, aided of course by trauma. Not only is the winter peak evident for the entire ten year period but it is apparent in each single year, as shown in table 1. The month in each year characterized by the highest birth injury death rate is in boldface type.

An entirely similar increase in deaths of infants on the fourth to the seventh day of life is to be seen, but to a lesser degree than in the curves shown for birth injury, for deaths from prematurity (159) and other diseases of early infancy (161 a+d). It is entirely probable that hypoprothrombinemia plays a part in these causes of death as well and also to a lesser extent influences the mortality from other causes on the fourth to the seventh day of life.

The final evaluation of the efficiency of vitamin K will be arrived at only when a sufficient number of infants have been treated with vitamin K. To this rapidly accumulating data we would add our very limited clinical experience.

In table 2 the incidence of unnatural bleeding in 219 control cases is contrasted with that observed in 400 K-treated infants. The few cases in which pro-

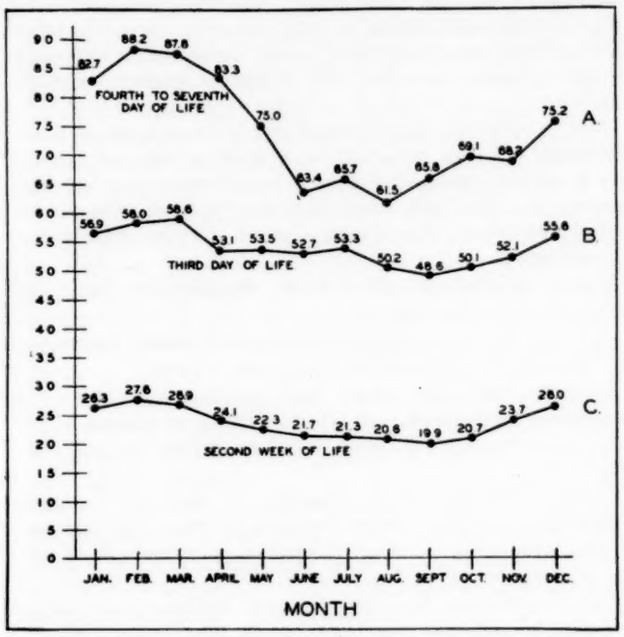

Chart 4.—Average specific monthly death rates from birth injury per hundred thousand live births for the ten year period 1927-1936.

thrombin times were not recorded were observed shortly before this study was begun. In all cases in which vitamin K was used to control hemorrhage, all bleeding ceased with remarkable promptness. The record of 400 treated cases with only four instances of hemorrhage or birth injury and these not associated with hypoprothrombinemia is unique in our experience. The striking contrast between the larger series of treated

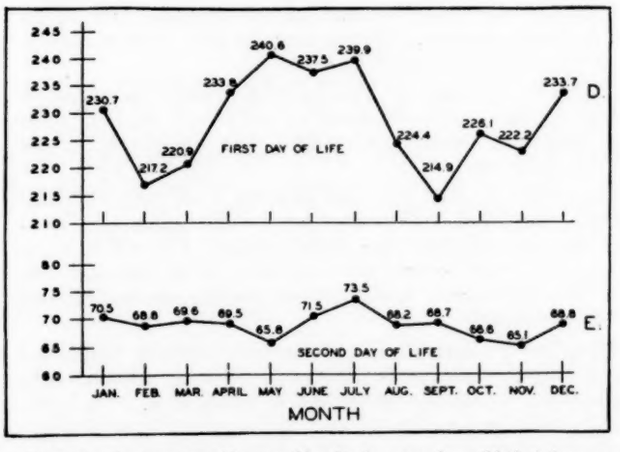

Chart 5.—Average specific monthly death rates from birth injury per hundred thousand live births for the ten year period 1927-1936.

cases and the smaller series of untreated cases is a pleasing tribute to the antihemorrhagic effect of vitamin K when administered to mother and infant. A brief synopsis of the cases summarized in table 2 is included in this report. Attention is called to the marked degree of hypoprothrombinemia present in certain of the control cases.

UNTREATED

CASE 1.—Bleeding from circumcision for three hours. Prothrombin seventy-seven seconds. Clotting time six and one-half minutes.

CASE 2.—Bleeding from clipped tongue frenulum and heel of five hours' duration. Prothrombin seventy-five seconds. Clotting time ten minutes. Controlled in two hours with vitamin K.

CASE 3.—Vomited blood on two occasions. Bleeding from cord and heal puncture for five hours. Prothrombin three and one-half minutes. Controlled with vitamin K in three and one-half hours.

CASE 4.—Bleeding from fontanel and heel punctures of fourteen hours' duration. Paralysis of right side of face and nystagmus developed. Died of intracranial hemorrhage on second day. Cord blood prothrombin one minute forty seconds. On day of death, prothrombin time eleven minutes. Clotting time above fifteen minutes.

CASE 5.—Cephalematoma at birth. Prothrombin time forty seconds at forty-eight hours.

CASE 6.—Bled from heel puncture for two hours. Prothrombin time six minutes. Clotting time nine minutes.

CASE 7.—Premature infant. Died on fourteenth day. An unsuspected intracranial hemorrhage found post mortem. Prothrombin time twenty-six seconds. Clotting time five and one-half minutes.

CASE 8.—Bleeding from scratches on face and puncture wound in heel for four hours. Prothrombin time eight minutes. Clotting time eight minutes. Controlled by vitamin K in two and one-half hours.

CASE 9.—Bleeding from heel puncture for three hours. Prothrombin seventy-two seconds. Clotting time eleven minutes. Controlled with vitamin K.

CASE 10.—Bleeding from heel puncture for nine hours. Prothrombin fifty-five seconds. Clotting time twelve minutes. Controlled with vitamin K.

CASE 11.—Large cephalematoma. Prothrombin at twenty-four hours thirty-five seconds. Clotting time nine minutes.

CASE 12.—Profuse bleeding from clipped tongue frenulum for seven and one-half hours. Epinephrine packs, local epinephrine injections and silver nitrate cauterization tried without success. Prothrombin time sixty-five seconds. Clotting time ten minutes. Controlled with vitamin K in three and one-half hours.

CASE 13.—Bled from circumcision for five hours. Prothrombin thirty-two seconds. Clotting time six and one-half minutes. Controlled with vitamin K in one hour.

CASE 14.—Spontaneous bleeding from mucous membrane of mouth for two hours. Prothrombin forty-eight seconds. Clotting time nine minutes. Controlled with vitamin K in one and one-half hours.

CASE 15.—Six day old child bleeding from cord following trauma. Had bled for twelve hours. Prothrombin time fifty-nine seconds. Clotting time eight minutes. Vitamin K given and in two hours prothrombin was thirty-one seconds and clotting time six minutes. In eight hours clotting time had dropped to three minutes.

CASE 16.—Profuse bleeding from heel puncture wound for seven hours. Prothrombin thirty-five seconds. Clotting time six minutes. Controlled by vitamin K in one hour.

CASE 17.—Bleeding from heel puncture for twelve hours. Prothrombin time seven minutes. Clotting time eleven minutes. Controlled with vitamin K in two hours.

CASE 18.—Profuse bleeding from heel puncture wound for two hours. Prothrombin two and one-half minutes. Clotting time seven minutes. Controlled with vitamin K in two hours.

CASE 19.—Seen on fourth day. Marked respiratory difficulty. Moribund. Signs of fluid in right chest. Died in about thirty minutes after admission. Postmortem examination revealed massive hemorrhage in right pleural cavity. Prothrombin time done immediately after death was three minutes forty seconds.

CASE 20.—Hemorrhagic disease of the newborn. Intracranial hemorrhage with death on eighth day. Clotting time fourteen minutes. No prothrombin time done.

CASE 21.—Bleeding from heel puncture. Clotting time nine minutes. No prothrombin time done.

CASE 22.—Bleeding from cord for twelve hours and also bleeding from heel puncture for several hours. Clotting time eleven minutes. No prothrombin time done. Controlled with vitamin K in two hours.

CASE 23.—Intracranial injury. Patient was slightly lethargic on fifth or sixth day but diagnosis did not become obvious until the seventh day, at which time convulsions appeared. Craniotomy performed showed definite contusion of the right hemisphere. This was a private patient and was not included in the prothrombin studies. Clotting time four minutes and bleeding time one minute on seventh day.

TREATED

CASE 24.—Baby admitted in poor condition after a hard labor. Mother received vitamin K for two weeks before labor. Child developed definite spasticity, had slight convulsions and refused food. The prothrombin time and clotting time on this child were normal throughout hospital stay. On discharge, this child was clinically well. No demonstrable intracranial signs were present.

CASE 25.—Precipitous labor. Moderate sized cephalematoma noted at twenty-four hours. Mother received no vitamin K before delivery. Baby received natural vitamin K concentrate on admission and at end of twenty-four hours. Clotting time on third day was four minutes.

CASE 26.—Moderate amount of bloody vaginal discharge noted on fourth day. This continued for a period of four days. No other abnormal tendencies. Clotting time on admission four minutes and, after forty-eight hours, three and one-half minutes. Mother received synthetic vitamin K intravenously eight hours before delivery. Baby received synthetic vitamin K by mouth on admission and at end of twenty-four and forty-eight hours. No prothrombin deficiency was noted at any time.

CASE 27.—Mother received intravenous vitamin K one hour and seventeen minutes before delivery. Small cephalematoma noted twelve hours after admission. Clotting time on admission three and one-half minutes.

COMMENT

It seems unlikely that hypoprothrombinemia and associated hemorrhage will occur in any newborn infant adequately treated with vitamin K through its mother and supplemented in the first few days of life. Prothrombin deficiency, so commonly present in the first few days of life, is the immediate cause of bleeding in hemorrhagic disease, and prothrombin deficiency is in turn the result of avitaminosis K. The etiology, prevention and treatment of hemorrhagic disease of the newborn would appear to be well established.

The role of hemorrhagic disease as a factor in birth injury has in the past been a matter of some controversy. Most writers on this subject have placed scant emphasis on any inherent tendency of the newborn infant to bleed at the time of delivery and would attribute the varying degrees of intracranial hemorrhage commonly occurring at this time to trauma alone. The laboratory, clinical and statistical data here described would indicate that avitaminosis K and associated prothrombin deficiency may well be a very real factor in many of these cerebral accidents, particularly in those infants in which the signs of intracranial hemorrhage are late in appearing, indicating that the hemorrhage is of a slow oozing character. Although trauma is the precipitating factor, the extent of existing damage may well depend on the degree of prothrombin deficiency. At the present time every infant born in the University of Virginia Hospital is treated with vitamin K through the mother and

this treatment is supplemented by oral administration of vitamin K in the first few days of life. Our experience to date convinces us that hypoprothrombinemia and associated neonatal hemorrhage will not occur in infants so treated and that so-called traumatic birth injury has been and will continue to be materially lessened.

ABSTRACT OF DISCUSSION

DR. CLIFFORD SWEET, Oakland, Calif.: A method of asking parents for autopsies which has proved successful is given each year to the new house officers. In our first approach, my associates and I assure the parents of our sympathy and tell them that we want to offer them one more real service—a complete examination of the body of their child. That we want to spare them the doubts that often assail people for years after the death of a member of the family. That often, even years afterward, people have returned to me and have said through their tears, "Doctor, I wish I had let you do that postmortem examination and then I would really know whether or not his death could have been prevented." That some disease may be found in the body which should be discovered for the sake of other members of the family, for example, miliary tuberculosis. Since we have placed first emphasis on the value to the family of the postmortem at the Children's Hospital in Oakland, where at least half of our patients are cared for as private patients, the autopsy percentage has remained for years about 80 and has at times risen to 90. Postmortem examinations are especially important on the bodies of newborn infants. By no other means can the real cause of death be determined and the family be assured that no condition is present which might affect the welfare of future infants born to them. In addition, the family can be spared the distress which so often ensues from their mistaken idea that they lost their child because of faulty obstetrics, as for example the infant with all the signs of a birth injury who at postmortem was found to have a cerebellar abscess of intra-uterine origin and a recently observed absence of muscle tissue in the diaphragm incompatible with more than a few weeks of life. I congratulate the authors on this work and on their modesty in drawing conclusions. I shall go home and make use of their excellent teaching.

DR. CHESTER BROWN, Arlington, N. J.: I should like to ask the authors to give the exact details of the administration of vitamin K to newborn infants. Do they add bile salts and, if so, in what amount and by what method?

DR. W. W. WADDELL JR., Charlottesville, Va.: With regard to Dr. Brown's question as to the details of the administration of vitamin K, the following procedure has been found quite adequate: Five-tenths cc. of natural vitamin K concentrate or its equivalent in the form of 2-methyl-1, 4-naphthoquinone administered immediately after birth and at the end of twenty-four and forty-eight hours will adequately prevent prothrombin deficiency in the newborn. One cc. of natural vitamin K concentrate or its equivalent in the form of 2-methyl-1, 4-naphthoquinone administered daily to the mother in the last ten days of pregnancy will prevent prothrombin deficiency in the offspring. We have never seen a single infant treated in either of these fashions which developed prothrombin deficiency. At the present time we are using synthetic products exclusively and believe that when they come on the the market they will be the preparations of choice. They can be procured at a much lower price.

Common Sense.—Three fifths of the practice of medicine depends on common sense, a knowledge of people and of human reactions. More than half of the remainder is technological and mechanical, the work of those medically trained artisans we call surgeons. What remains may be termed preventive; and this in bulk very properly and inevitably comes to be taken over by the state, though people, being what they are, find ways of evading a disagreeable statute as in the case of compulsory vaccination—intended for others but not themselves. Not everybody obeys the traffic light, and every regulation breeds its jay-walkers and its racketeers.—Cushing, Harvey: The Medical Career and Other Papers, Boston, Little Brown & Co., 1940.

CLIMATE AND MILITARY PREPAREDNESS

CHARLES I. SINGER, M.D.
LONG BEACH, N. Y.

Any plan for military preparedness based on a defense of this hemisphere would be incomplete without proper consideration for the role of climatic factors in American warfare. Adherence to the Monroe Doctrine may necessitate the sudden dispatch of troop units with considerable striking power sufficient to prevent invasion or to break enemy footholds in any part of the Americas. Extending from one arctic region to the other, the Americas present all types of climate and all varieties of climatic change. Diseases caused by abrupt climatic change or by prolonged exposure are manifold and constitute important problems of preventive medicine in warfare. Troop movements, therefore, must always carefully take into account the degree of climatic change involved lest the efficiency of the fighting force be considerably, even dangerously, impaired. It is my purpose in this paper to outline the principal factors of this important problem and to present a basic and practicable plan for its solution.

By "climate" I mean the sum total of meteorologic phenomena that characterize the average state of the atmosphere at any given locality. "Weather" is only a phase—a single act—of this succession of phenomena. Climate is a long range view on weather.

Out of the complexity of coeffective factors in climate one may separate temperature, humidity, winds, barometric pressure and sunshine duration as the most important in relation to human life. These are the factors which determine the heat absorbing capacity of the atmosphere, which means the rate of heat absorption from any given body surface with a given temperature expressed in calory/square inch/minutes. This heat absorbing capacity of the atmosphere is proportionate to the difference between the temperatures of the body surface and of the atmosphere; it is influenced by humidity and by barometric pressure and it increases with the square root of wind velocity.

HUMAN COMFORT

The individual feels comfortable when his heat production is in equilibrium with the heat absorbing capacity of the environment. Every person has a characteristic comfort zone. When this heat equilibrium is upset so that either chilling or perspiration results, the limits of the comfort zone have been exceeded. The limits of the individual comfort zone depend on, and fluctuate with, seasons, time spent indoors and outdoors, clothing, activity, age, sex and constitution. Outside the comfort zone the human organism is confronted with various problems. If the heat absorbing capacity of the environment diminishes, heat loss is accomplished by vasodilatation in the skin and perspiration; heat production is diminished by lower muscular tone and lowered basal metabolic rate. In a cold environment (increased heat absorbing capacity) heat preservation is the problem. This is performed by vasoconstriction of the cutaneous blood vessels, increased muscular tone and a higher basal metabolic rate. In a change of season the heat absorbing capacity of the environment changes more or less gradually. Thus, going from fall to winter, the heat absorbing capacity increases. This gradual change extends the lower limits of the comfort zone, so that

indoors one is comfortable at a temperature five or six degrees Fahrenheit lower than the same room in summer. A corresponding elevation of the upper limit of the comfort zone occurs during the gradual change from spring to summer. No hardship is imposed on the organism in adjusting to such a slow change. In a sudden change, however, such as rapid movement of troops from temperate to subarctic regions, the necessity for quick adaptation is forced on the body. This requires maintained vasoconstriction and a sharp rise in the basal metabolic rate, which, if prolonged, may produce deleterious effects. Prolonged and repeated nasal vasoconstrictions lower the resistance of the mucous membrane, a faulty reflex which may be an important factor in the causation of infections of the upper respiratory tract. The importance of respiratory diseases in relation to fighting efficiency of troop personnel is self evident. This was much less a factor in the old style of trench warfare—the war of position—than in the modern tactical maneuvers involving rapid movements of troops over great distances. In trench warfare soldiers with acute respiratory diseases were kept at a short distance in the rear, were considered as reserves and were returned to the front line in from seven to ten days. In a war of movement they are completely lost as effectives.

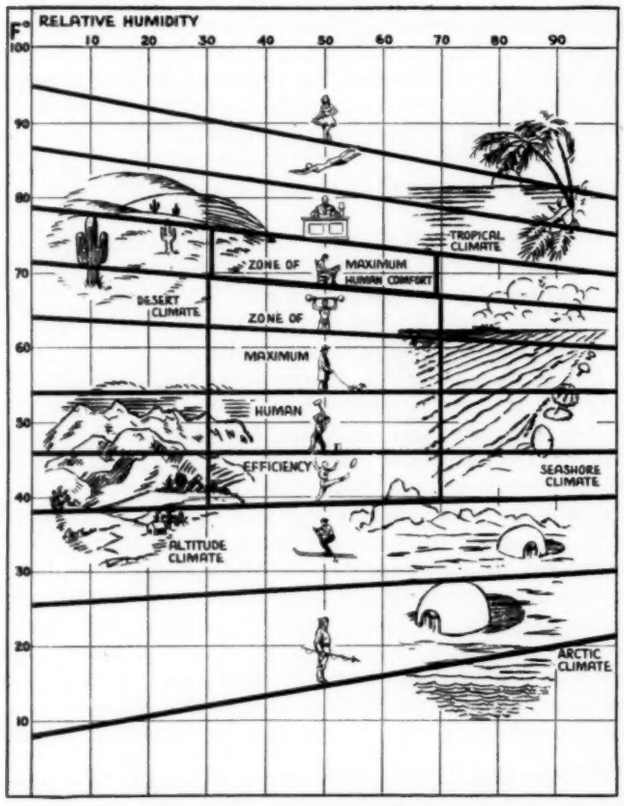

Fig. 1.—Illustrated climatogram, showing all possible combinations of humidity and temperature and zones of maximum human comfort and efficiency. Lines of effective temperature connecting points of equal human comfort comprising different combinations of temperature and humidity (heavy lines). Adapted to environment by exposure, clothing and activity, man feels comfortable along extremely differing lines of effective temperature.

HARDENING

By means of planned, gradual, repeated exposures, the limits of the individual comfort zone may be expanded—a process known as hardening. Through the hardening process the system acquires a direct defense mechanism against sudden and marked changes in the external environment, while the use of clothing and heating constitutes an indirect defense. The average American, following the instinct to seek comfortable temperature levels, has a limited comfort zone as a result of clothing and indoor heating—a reliance on indirect defense. A systematic extension of the comfort zone by direct methods of hardening American troops, especially those who may face the rigors of arctic warfare, is imperative for full fighting efficiency.

It is not sufficient to adapt soldiers to sudden climatic changes alone. They must be able to endure prolonged climatic exposures associated with physical strain. This is the real measure of the stamina of the individual. There is a limit of endurance, which may be called "peak performance," the level of which can be raised by training. The example of lack of stamina with good climatic adaptation is provided by the Russian soldiers in the recent war in Finland. The divisions annihilated north of Lake Ladoga were healthy, hardy young Russians, well clothed for action in such climates and trained in the Russian steam baths to endure sudden changes in temperature. However, they were not able to withstand the rigors of prolonged exposure to the Nordic winter of Finland. Fundamentally, these were instances of units pitted against one another in a test of endurance requiring peak performance, and the Russians failed.

Comparative Morbidity Among Fresh and Seasoned Troops

	Company A, City to Tyrol, 248 Men, Number of Cases	Company B, Russia to Tyrol, 242 Men, Number of Cases
Common cold (without fever)	32	10
Tonsillitis	12	4
Influenza	28	7
Pneumonia (lobar)	8	2
Appendicitis	3	0
Rheumatic fever (acute)	3	1
Fibrositis	12	4
Total morbidity	98—39.5%	28—11.5%

The low morbidity rate among the troops hardened in Russia speaks for itself on the value of conditioning.

In the recent Norwegian campaign the French sent troop units of the Foreign Legion into action. These men were trained in a desert climate with extreme variations of temperature, both high and low, combined with low humidity. The fluctuations of temperature in desert climates are due to a loss of heat through radiation at night. This is gradual, and one blanket at night is sufficient to compensate in protecting a soldier from this change. In Norway, with its predominantly low temperatures, high wind velocity and high humidity, a climatic adaptation too great to be made suddenly was imposed on the legionnaires. This further illustrates poor judgment in a warfare requiring climatic changes. The dispatch of French Alpine Chasseurs was indicated in this case. In the rout of the English at Steinkjer, clothing inadequate for northern Norway was a contributing factor.

Abrupt climatic change may bring to the fore latent diseases such as tuberculosis, arthritis, heart disease and respiratory infections. Not only may latent diseases come forth but general resistance to acute infections tends to be lowered. For example, during the first world war I was detailed as a medical officer with two companies of infantry to clear up the high mountain road on the side of the Becco di Filla Donna mountain in the Austrian Tyrol, which was buried under an avalanche of snow. The time was March 1916, the

altitude was 14,000 feet. We started from the Adige valley with an average temperature of 60 F. to reach a wind swept site the average temperature of which ranged from 30 to 35 F.

Company A had been stationed in the valley for about six weeks and was composed of raw recruits from cities. Company B had arrived ten days previously after an all winter campaign through Russian Poland—a company of seasoned, hardened fighters. It took us three days to accomplish our task, working in the snow, wind and rain twelve hours a day, and sleeping in the primitive deserted stone huts of mountain shepherds. In a five day period, beginning with the first day of our assignment, the list of comparative morbidity was as shown in the accompanying table.

From this one may conclude that the ideal of physical fitness in the soldier of war should include:

1. Ready adaptability to sudden and extreme climatic change.
2. Ability to endure prolonged exposure to extreme change.
3. Maintenance of peak military efficiency in either or both of the aforementioned instances.

SUGGESTIONS FOR THE UNITED STATES ARMY

1. The training of recruits should start in the fall of the year. The gradual change to winter affords a parallel to gradual hardening by progressive exposure. These series of exposures to a climate growing increasingly rigorous is the best method for obtaining climatic adaptability whenever possible. Recruits starting next April under the present conscription plan will require at least ten months to obtain the adaptability acquired by the October group in five months.

2. The entire system of training troops has been based on summer maneuvers in the North and winter maneuvers in the South. In my opinion this procedure should be completely reversed to provide troops trained for both extremes—subarctic rigor and tropical mugginess.

3. Climatic adaptibility can be furthered in training by frequently repeated hydrotherapy. The procedures to be recommended are (*a*) surf or river bathing wherever possible, (*b*) cool and gradually cooled showers as a part of the daily routine and (*c*) Scotch douche apparatus with alternating hot and cold streams of water. Those hydrotherapeutic processes are especially useful in the hardening of soldiers with poor climatic adaptability and in increasing self confidence and military morale—a very important military consideration.

4. A low average temperature of winter barracks, not exceeding 65 F., is recommended in training. Observations over several years show that the number of colds in apartment houses increase with a rise of indoor temperature above 70 F.

5. Parallel with this suggestion (lowering the temperature of the barracks), studies should be made on the vestimental climate of the soldier by frigorometric methods, with different clothing materials and large series of cutaneous temperature readings under these materials. The clothing of the new United States Army will thus be based on scientific selection with due consideration for the climatic requirements of the region in which it is to be used.

6. Individual climatic endurance charts are recommended as aids in determining the adaptability of the soldier of whom special duties may be required. These charts should include:

(*a*) Line of chilling at different humidities.
(*b*) Line of perspiration at different humidities.
(*c*) Basal metabolic rate in both regions.
(*d*) Behavior of skin and rectal temperatures in planned exposure:

(1) Convergence of cutaneous and rectal temperatures after a short exposure shows faulty heat regulation: domestication.

(2) Divergence of cutaneous and rectal temperatures (rectal temperature increased, cutaneous temperature drops) after exposure indicates acclimatization.

(*e*) Ice cube test for thermic reacting ability of the skin:

(1) Delayed local hyperemia appearing later than ten seconds after two seconds contact with an ice cube indicates poor thermic reacting ability of the skin.

(*f*) Erben's test for determining autonomous nerve balance: A positive Erben's test is a slowing down of the pulse rate by more than ten beats per minute after forced forward bending. It shows vasomotor instability, noted usually in vagotonic individuals. Persons with a positive Erben's reaction are poor risks in climatic exposure unless hardened.

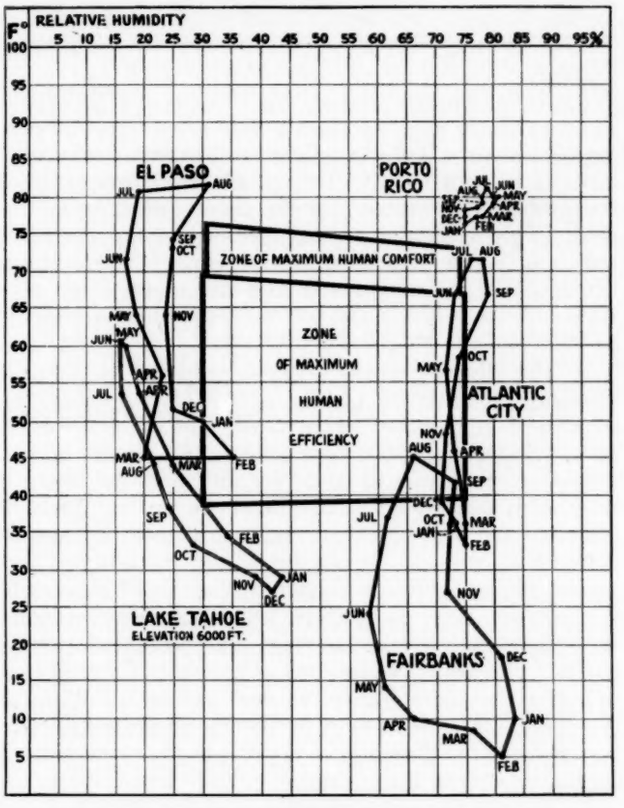

Fig. 2.—Comparative climatogram. The climatogram, which covers all possible combinations of temperature in degrees Fahrenheit and relative humidity (per cent saturation), has projected on it the zone of maximum human comfort and the zone of maximum human efficiency. Silhouetted against these zones are the monthly temperature and humidity averages of different localities representative of different climatic types. Characteristics of climate types represented are:

Puerto Rico, tropical: negligible fluctuation of a high temperature level, high humidity, lack of winds; enervating debilitating climate.

Fairbanks, Alaska, arctic: moderate fluctuation of an extremely low temperature level, high humidity; exhausting climate.

Lake Tahoe, Nevada, high altitude: extreme diurnal and seasonal range of temperature, low humidity, low barometric pressure, low oxygen content, high ultraviolet quality in solar radiation; stimulating climate.

El Paso, Texas, desert: extensive diurnal and moderate seasonal range of temperature, extremely low humidity, abundant sunshine; moderately stimulating climate.

Atlantic City, seashore: moderate diurnal, marked seasonal changes in temperature, high relative humidity, vigorous sea breezes; stimulating climate.

(*g*) Changes in blood chemistry: Completed acclimatization is noted by definite characteristic changes in the blood chemistry involving a change in the levels of phosphorus, calcium, sugar, carbon dioxide combining power and cholesterol.

(*h*) The modified Muck test: This will discover endocrine imbalance by showing inability of maintaining the blanching of the nasal mucous membrane following topical application of epinephrine. After complete acclimatization (increasing the sympathicus tonus) the vasoconstriction in the nasal mucosa

is maintained beyond fifteen minutes and blunt irritation of the blanched area causes a characteristic elevated white streak reaction.

7. Artificially controlled climatic testing laboratories for some of the foregoing tests may be readily reproduced with modern air conditioning apparatus. It will therefore be possible to select men for special tasks from among those who can adapt most quickly to changes in environment as observed in artificially controlled test rooms. Thus a yardstick on which to base the training of others will also be provided. Seven million dollars has been appropriated for an army aviation test station at Fairbanks, Alaska, to be ready in November, to study the behavior of airplane motors in arctic climates. This is a very necessary establishment, yet little provision has been made for testing the climatic adaptability of the most important military machine—the human body. Such tests should be conducted both at rest and during varying degrees of activity in different clothing.

8. As previously stated, the Western Hemisphere includes every type of climate and every type of geological milieu. If the possibility exists that troops may have to be sent to any of these sites, a larger body of troops especially trained for the climate must be organized. This applies at present more to troops needed in subarctic zones than to those for tropical use. Other acute needs envisage desert and mountain (high altitude) troops. For a clearer understanding of climatic problems, a climatogram is presented.

9. The climatogram is a graph prepared to compare climates of different places in the United States as expressed in monthly temperature and humidity averages. Superimposed are the zones of maximum human efficiency, both mental and physical, and the zone of maximum human comfort. Also shown are lines of effective temperature depicting equivalents of human comfort at varying temperatures and humidity. This means that a person is as comfortable at 84 F. and 40 per cent humidity as at 88 F. and 80 per cent humidity with an 8 mile breeze blowing, other conditions being equal. The limits of the zone of comfort of any person are given as perspiration at one end and chilling at the other. The process of hardening extends the comfort zone in the direction of chilling as an expression of increased adaptability.

In warfare the climatogram is useful in that it shows graphically the extent of a climatic change involved in a required military maneuver.

It also shows the relations of climate of the new environment with zones of maximum human efficiency and comfort. From the military point of view relativity in human reaction to climatic change is most important. The climate of the site of previous training in relation to the climate of the proposed site will greatly influence the adaptability and the efficiency of the troops. For example, in winter in the temperate zone greater efficiency may be expected of troops trained in subarctic regions as compared with troops trained in subtropical environments.

10. The present climatic health resorts and spas can be used if needed for the rehabilitation of convalescents. Most of these resorts are located in salubrious climates. A climate void of extremes, sedative in character, is especially recommended for convalescents. The employments of all types of natural resources and facilities of the resorts can be best accomplished by medical men well acquainted with them.

11. Each climate has its optimal diet. It should be used as far as possible to enhance adaptation. A high fat, high protein, high calory diet is advisable in cold climates. A high carbohydrate, low fat and protein, low calory diet is advisable in tropical climates. Owing to a lack of fresh vegetables and fruits in cold climates there is a lack of minerals and vitamins in Nordic diets. Tropical soils are poor in minerals and rich in humic acid and fruits and vegetables are plentiful but are poor in minerals. Loss of mineral salts through perspiration is an additional factor. Hence the administration of concentrated mineral and vitamin pills are advisable in extreme climates, both arctic and tropical.

12. Creation of a special climatic advisory board comprising meteorologists, physicians, physiologists, physicists, chemists and biochemists is advised. Their function should be:

(*a*) Further study of climatic factors in warfare.

(*b*) Establishment of standards of training by evaluation of results of training in climatic relationship.

(*c*) To act in a consultant capacity in troop movements.

(*d*) To set the standards for distribution of convalescents to proper climatic milieus.

STERILITY IN THE MALE

DIAGNOSIS AND TREATMENT

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Sterility in the male is an exceedingly complex subject entailing exhaustive urologic, endocrinologic and laboratory studies. For the purpose of simplification, all cases can be divided into two groups, urologic and endocrinologic. Occasionally malnutrition or vitamin deficiency may cause sterility, but it occurs so infrequently that for practical purposes it need not be stressed. The paper is limited to the study of sterility as it affects the human being, as the result of current animal experimentations are not analogous to those found in man.

The urologic cases are classed as either congenital or acquired, depending on the etiology. The most frequent congenital causes of sterility are hypospadias, cryptorchism and abnormal attachment of the epididymis to the testicle. The majority of acquired cases are the result of a former gonorrheal infection resulting in bilateral epididymitis, stenosis of the ejaculatory ducts, seminal vesiculitis, vasitis and urethral stricture.

The endocrinologic cases are due to atrophy of the testicles, pituitary dysfunction and hypothyroidism.

The study of sterility must include a complete history and examination of the genito-urinary tract. In the history, the following questions should be stressed: Age at puberty, number of years married, any children by previous marriage, contraceptives used, type or method and how long; mumps, age and complications; syphilis; gonorrhea, duration, complications; operations on genito-urinary tract; injuries to genital tract; urologic symptoms; sex life.

In the physical examination the penis should be examined for hypospadias or scars; the urethra for stenosis of the meatus, discharge or stricture; the testes for cryptorchism, atrophy, nodules on the epididymides or thickening of the vas deferens; rectal palpation to

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determine the size and consistency of the prostate and the condition of the seminal vesicles. The examination should also include a basal metabolism test.

UROLOGIC ASPECTS

Aspermia is due either to atrophy of the testes or to an inflammatory occlusion situated somewhere between the globus major and the ejaculatory ducts. When the testicles are normal, one can be certain that the lack of sperm is due to obstruction. It is then important to establish the exact point where it occurs so that the proper treatment may be given to overcome the obstruction.

Stenosis of the ejaculatory ducts can be determined by the failure of the seminal vesicles to empty after massage and the absence of seminal fluid in the expressed secretion. The patient also gives a history of pain or burning sensation in the perineum or rectum at the moment of ejaculation and in some cases for several hours afterward. The treatment is to dilate the ducts with bougies passed through a urethroscope.

To determine the patency of the vas, I inject solutions into the lumen through small incisions made in the scrotum. For injection material 5 per cent mild protein silver is used on one side and 2 per cent mercurochrome on the other. Before the injections are made, a urethral catheter is inserted into the bladder. When both vasa are patent, the solutions appear immediately from the outer end of the catheter. If one solution does not appear, one knows definitely which side is blocked. I have attempted to relieve the obstruction in the vas by passing fine probes or forcibly injecting solutions into the lumen, but with only occasional success. One is handicapped by the fact that this is an operative procedure and repeated attempts cannot be made as in the case of a urethral stricture.

When both vasa and ejaculatory ducts are patent, the absence of sperm is due to an obstruction in the epididymides. In these cases the most successful treatment is Hagner's method of anastomosing the vas deferens to the efferent ducts of the globus major, thereby sidetracking the epididymis.

Chronic seminal vesiculitis can produce a depressant action on sperm, reducing their motility to such a degree as to prevent conception. Long continued massage and heat will remedy this condition.

In hypospadias, even though the slit is small, the improper deposition of the secretion may prevent pregnancy. The simplest method of overcoming this condition is for the patient to have intercourse wearing a condom with a small opening at the end.

A severe urethral stricture may prevent conception by preventing sufficient sperm being deposited in the vagina. Chronic prostatitis is not a cause of sterility, as I have examined men with families in whom the prostatic secretion was loaded with pus cells.

Cryptorchism can be corrected either with glandular therapy or with the Keetley-Torek operation. Treatment should not be delayed after puberty as it is now known that, the longer correction is withheld, the greater is the destruction of the spermatogenic function of the testicle.

ENDOCRINOLOGIC FACTORS

If the urologic examination is negative, one can correctly assume that some endocrine dysfunction is present. This supposition can be proved by an examination of the sperm. In a study of the ejaculate the three most important factors are (1) the number of sperm per cubic centimeter, (2) the percentage of abnormal forms and (3) the degree of motility.

The work of Hotchkiss [1] has shown that the previous concept of man being sterile if the sperm count is below 60,000,000 per cubic centimeter is incorrect. In his work on 200 men whose wives were pregnant, Hotchkiss found counts as low as 2,250,000 per cubic centimeter and in 25 per cent of the men the count was below 60,000,000.

Moench [2] states that the number of abnormal sperm should not exceed from 19 to 20 per cent. He assumes that fertility is impaired when abnormalities reach from 20 to 22 per cent and that clinical sterility is usually present if more than 25 per cent abnormal forms are found.

In a series of forty-eight men whom I was able to follow over a period of years, 35 per cent had less than 20 per cent abnormal sperm and pregnancy occurred in every case without any treatment, bearing out Moench's conclusions. All of the patients showing abnormalities of the ejaculate can be classified into four groups.

1. Normal sperm count and normal percentage of abnormal forms with a lowered basal metabolic rate.
2. Oligospermia and a normal percentage of healthy sperm.
3. Normal number of sperm with an increase of abnormal forms.
4. Oligospermia with an increase of abnormal forms.

Fifteen per cent of the patients were in group 1, having a basal metabolic rate varying from minus 10 to 18. They were all given thyroid by mouth, following which the desired results were obtained.

Patient S. was most instructive. He was entirely normal except for a metabolic rate of minus 16 when first seen in 1934. Chorionic gonadotropin was given for four months with no result. Thyroid was then administered continuously, and in November 1935 his wife became pregnant. For the next three years thyroid was discontinued. He returned in June 1938, as they were anxious to have another child and his wife had not become pregnant again. Thyroid was again administered and three months later she became pregnant.

Abnormal Forms After Twelve Injections of 5 Mg. of Testosterone Propionate

	Before Treatment	After Treatment
Case 1	24%	19%
Case 2	14%	17%
Case 3	18%	17%
Case 4	31%	31%
Case 5	27%	33%
Case 6	28%	50%

It is in groups 2, 3 and 4 that occasional brilliant results, but mostly failures, are reported after the administration of endocrine products (Heckel,[3] Hotchkiss,[4] Browne,[5] Rubinstein and Kurland [6]).

1. Hotchkiss, R. S.; Brunner, E. K., and Grenley, Philip: Semen Analyses of 200 Fertile Men, Am. J. M. Sc. **196:** 362-384 (Sept.) 1938.
2. Moench, G. L., and Holt, Helen: Sperm Morphology in Relation to Fertility, Am. J. Obst. & Gynec. **22:** 199 (Aug.) 1931.
3. Heckel, N. J.: The Gonadotropic and the Gonadotropic-like Factor in the Treatment of Male Sterility, Endocrinology **22:** 111-114 (Jan.) 1938.
4. Hotchkiss, R. S.: Methods in Sperm Analyses and Evaluation of Therapeutic Procedures, J. A. M. A. **107:** 1849-1851 (Dec. 5) 1936.
5. Browne, O'Donel: Hormonal Treatment of Male Sterility, Irish J. M. Sc. **6:** 618-621 (Aug.) 1939.
6. Rubinstein, H. S., and Kurland, A. A.: Effect of Testosterone Propionate on Spermatogenesis in Human, South. M. J. **32:** 499-503 (May) 1939.

Little is known about the endocrine changes that cause sperm to become abnormal in men who are apparently healthy and show no glandular disturbances. Therefore the administration of endocrine products at the present time is entirely experimental and will continue to be so until the glandular dyscrasias which cause changes in the sperm are known for certain.

It is impossible to explain why a group of men each receiving the same androgen or gonadogen for the same condition, as for example oligospermia, should react differently. In some instances there will be an increase in the number of sperm, whereas in others there will be no change. Marked increase in the number of abnormal forms may also occur in one man while a decrease will result in another. The only consistently good results of glandular therapy at this time occur in those cases in which the thyroid function is deficient.

In the zeal to treat sterility, one must guard against the inclination to use large doses of androgens, estrogens and gonadotropic agents or to administer them continuously for long periods. I have seen aspermia develop in a patient with 34 per cent abnormal forms after receiving 0.5 cc. of chorionic gonadotropin three times weekly for two months. Examination of the same patient one year later showed only a few sperm present with 25 per cent abnormal forms.

Another patient with 26 per cent abnormal forms received 2 cc. of pregnant mare's serum three times a week for one month. Following the injections the abnormal forms increased to 74 per cent. After a rest period of one month they dropped to 31 per cent.

At the present time testosterone propionate is the androgen most frequently used by physicians in the treatment of both impotence and sterility. Heckel [7] and McCullagh and McGurl [8] have shown that this drug when used in doses of from 25 to 50 mg. caused a decided decrease in the number of spermatozoa. However, according to the observations of Rubinstein and Kurland [6] the administration of small doses of testosterone, 5 mg. three times a week, caused an increase in the number of sperm.

Encouraged by their results, I studied the effect of small doses of testosterone propionate on the abnormal sperm of six patients. In three men the percentage was within normal limits and in the other three there was a pathologic increase in the abnormal forms. Testosterone propionate was injected three times weekly in 5 mg. doses for one month. As can be seen from the table, there was no consistent change after the administration of the drug. In two patients with an increased number of abnormal sperm before treatment the drug caused a further increase in pathologic cells, while in the third patient there was no change.

In view of the harm that may occur, the indiscriminate injection of endocrine products should be stopped. One should be especially cautious in the use of large doses over long periods of time as the pathologic changes in the sperm may be increased by such treatment.

It is advisable to make repeated sperm analyses during the administration of these potent drugs in order to guard against transient or possible permanent damage to the spermatogenic structures of the individual.

7. Heckel, N. J.: Production of Oligospermia in Man by Use of Testosterone Propionate, Proc. Soc. Exper. Biol. & Med. **40**: 658 (April) 1939.

8. McCullagh, E. P., and McGurl, F. J.: Effects of Testosterone Propionate on Epiphysial Closure, Sodium and Chloride Balance and on Sperm Counts, Endocrinology **26**: 377-384 (March) 1940.

SUMMARY AND CONCLUSIONS

All cases of male sterility can be divided into two groups, urologic and endocrinologic. The urologic cases are either congenital or acquired.

Studies of patients should include a complete urologic history, examination of the genital tract and of the ejaculate, and a basal metabolism test.

The endocrine treatment is at present in the experimental stage. Results cannot be attained in all cases until the glandular dysfunctions which cause sterility are known.

At present, it is only in cases of hypothyroidism that consistently good results are obtained.

The administration of large doses of testosterone propionate causes marked decrease in the number of spermatozoa per cubic centimeter. The injection of 5 mg. of testosterone propionate three times a week for one month caused no appreciable change in the percentage of abnormal forms in patients with both normal and abnormal sperm counts.

Caution should be exercised in the administration of large doses of endocrine products over long periods of time.

Repeated sperm analyses should be made during treatment to guard against transient or possible permanent damage to the spermatogenic structures of the individual.

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THE NATURE OF HUMAN INFERTILITY

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The average couple seeking relief from sterility in the year 1920 had about a 20 per cent chance of accomplishing their desire if they were fortunately able to consult one of the half dozen physicians in this country who were at that time devoting particular attention to the subject. In the hands of other doctors, including eminent gynecologists and urologists, the likelihood of success was only half as great. Today there are many groups of expert workers whose percentage of cures ranges from 40 to 50. It would seem that the profession has some right to congratulate itself on this striking improvement in the management of a problem which is vitally important in the lives of more than 2,000,000 American homes and consequently, in the aggregate, of no small importance to the social and economic welfare of the nation.

Huhner's method of postcoital examination and the Rubin test of tubal patency initiated a long series of technical advances, among which may be mentioned more precise and critical evaluation of the semen, better approaches to the assay of endocrine functions, and the use of both endometrial and testicular biopsies. Indeed, investigation and the interpretation of observations have now progressed to a point at which little of a factual nature needs to remain obscure in the physical status

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The conclusions reported in this paper are based in large part on an organized group study of sterility, initiated in 1927 at the Evans Memorial for Clinical Research and Preventive Medicine, a unit of the Massachusetts Memorial Hospitals.

of a childless couple, excepting only the question of whether or not mature ovulation occurs. There still exists, however, a considerable misconception of those basic principles which underlie a reproductive failure on the part of two apparently healthy individuals, principles which must be understood if investigation and treatment are to be carried out intelligently. At the risk of repeating certain ideas previously voiced by us and other workers, we propose in this paper to consider some of the fundamental details of the nature of infertility.

During the past thirteen years it has been our privilege to carry out the investigation of childless marriages as a group endeavor. Experience has confirmed certain theories on the causation of sterility which were responsible for the establishment of the group and has afforded information of great utility in the selection of proper therapy. Results have amply justified the routine use of diagnostic procedures which in some cases were perhaps unnecessarily elaborate and at times inconvenient. Although the members of the section to which this communication is addressed are particularly concerned with the urologic aspects of the subject, it should again be emphasized here that only by a thorough inquiry into the condition, constitutional as well as genital, of both husband and wife can improvement in the percentage of successful results be expected.

The distribution of responsibility between husbands and wives can be appreciated only when one takes into account the important principle of multiple causation. In a minority of cases, perhaps 30 per cent, there exists some condition which alone and by itself is sufficient to make conception impossible. Such absolute factors of sterility would be exemplified by atrophy of the testes and by occlusion of the genital passages of either sex. The majority of cases present multiple abnormalities, generally of lesser grade. One or two of these might be overcome by nature, but several of them acting together lower the combined fertility of the couple to a point inconsistent with the production of offspring. Important factors of this type are certain constitutional faults which because of their subclinical character, often give little hint of their presence. With regard to this group of conditions it is not easy to reach precise conclusions as to cause and effect, since many instances of such abnormalities are found in ordinarily fertile individuals. But the persistent appearance of a given pathologic condition among the faults discovered in the examination of sterile couples at least raises the suspicion that it is significant as a possible causative factor; and this supposition gains support when correction of the condition in question is repeatedly followed by an objectively demonstrable improvement in fertility.

Of interest in this connection are statistics obtained during recent years from couples subjected to that complete group study which we believe necessary for the best interests of patients. In a consecutive series of 200 cases, all without exception showed at least two conditions capable of exerting a depressing effect on fertility. One case presented nine such factors, and three cases eight factors each. The average incidence was 4.8 factors per case. Many of these abnormalities were, of course, entirely unsuspected prior to the investigation, since they had no evident effect on the general health. It should be noted that the rule of multiple causation holds true even in absolute sterility; sixty-nine such cases occurred in this series, and every one of them presented secondary factors of infertility in addition to a principal cause.

The concept of sterility as a matter of divided responsibility, rather than as a fault ascribable entirely to one or the other partner, has been abundantly emphasized in the literature. Nevertheless its truth is still too seldom recognized in practice. Although the days have happily disappeared when the wife was regularly subjected to dilation and curettage as the first step in the management of a sterility problem, the husband's semen being examined only as a last resort and then only casually, there still exists an unfortunate tendency to treat the first discovered abnormality in each case on the unwarranted assumption that no other faults are present. Thus time is fruitlessly wasted, whereas a more adequate survey, taking both partners into account, might have led to success. The fact is that, in 90 per cent of childless couples seeking the help of the physician, some evidence of infertility can be demonstrated in both members of the pair.

Numerous estimates have been offered on the comparative importance of sterility in the male and in the female. These vary remarkably, depending on the approach to the problem and the experience of the individual author. From ancient times, most of the blame for childless unions has been assigned to the wife. One writer, on the other hand, has indicted the husband in 100 per cent of cases, on the grounds that all sterility is due to gonorrhea and that all gonorrhea is the fault of the male. The quantitative data at present available on the question of divided responsibility allow only approximate conclusions. Our own experience indicates that, of all demonstrable abnormalities known to militate against fertility, some 30 per cent occur on the male side. The statement just made expresses the numerical division of factors between the sexes, and nothing more. It should not be interpreted as asserting that the male is responsible, either wholly or chiefly, for 30 per cent of barren marriages. While it is true that around 90 per cent of the husbands in our cases have proved to be more or less infertile and that some 40 per cent of them show notable deficiencies, one still cannot say to what degree any given man is to blame for the sterility of his particular mating unless one takes into account also the reproductive capacity of his partner. A recent tabulation made by us on this basis gives, in summary, the following results: Out of 100 cases the male was entirely at fault in eight and the female in fourteen. In the remaining seventy-eight cases the responsibility was divided, being chiefly male in twelve cases, equal in fifty-one and chiefly female in fifteen.

These figures seem to offer a rare opportunity and a definite challenge to urologists, who as a group have devoted comparatively little interest to problems of human reproduction. When one considers, however, that more than 12 per cent of all marriages are involuntarily childless and that 30 per cent of the pathologic conditions underlying this state of affairs occur on the male side, it seems evident that the matter of infertility in men is worthy of the serious attention of the urologic profession. Increasing recognition of the importance of male responsibility has already proved to be one of the outstanding advances of recent years in the field of sterility research and practice.

It has also come to be recognized that constitutional causes of infertility, significant enough in both sexes,

have in the male an aggregate importance far greater than that of local abnormalities of the genital organs. This fact in no wise lessens the need for the expert services of the urologist, since in the last analysis it is he who must correlate all data on the male partner, make a diagnosis, direct treatment and determine progress. As a matter of routine he identifies, and treats as indicated, disorders falling within his major field. Those most serious with relation to sterility, notably atrophy of the testis and occlusion of the epididymis or vas, have showed a comparatively small incidence among our cases. Other derangements, such as varicocele, chronic prostatovesiculitis and stricture, are of more frequent occurrence but of much less importance as causative factors of impaired fertility.

In a large majority of cases of male deficiency the principal trouble is the depressing effect on the spermatogenic function exerted by one or another type of constitutional disturbance. No other interpretation suffices to explain abnormal morphology of the spermatozoa, a condition now well understood to be a direct evidence of infertility. Among constitutional faults of the sort in question, those most frequently encountered are endocrine disorders, chronic intoxications from infectious or other sources, and poor hygiene in the matters of diet and exercise.

Normal spermatogenic function depends on two processes: hormonal stimulation provided by one or more fractions of the product of the anterior pituitary lobe, and response to that stimulus on the part of the tubular epithelium of the testis. It appears that constitutional disorders can decrease fertility by interfering with either of these processes: in other words, by inducing a state of anterior pituitary insufficiency or by diminishing the reactivity of the germinal epithelium. In any case the degree of malfunction produced will vary not only according to the severity of the depressing influence but also according to the inherent strength of the sex cells. Thus it happens that a given constitutional fault may render one man sterile while it has no appreciable effect on the reproductive capacity of another. Thus also are explained wide differences in the benefits obtained by treatment of apparently similar cases. Moreover, the permanence of the harm done is determined by the age at which the causative factor becomes operative. Pituitary failure at puberty is likely to result in testicular hypoplasia, and although the endocrine balance may later stabilize itself there will remain a stigma which can never be removed once the growth impulse is dead. The same endocrine disturbance appearing in adult years leads simply to functional underactivity of an organ normally developed, a disorder often amenable to treatment.

Although anterior pituitary insufficiency is the commonest among endocrine factors of subnormal spermatogenesis, the routine administration of gonadotropic substances should be condemned. Accurate diagnosis is prerequisite to proper treatment, since there are many conditions, endocrine and other, that may produce the same subnormality. The hypothyroid cases, which are fairly numerous, form an interesting group. Often these patients present none of the classic signs or symptoms of myxedema; a diagnosis can be made only on the basis of the metabolic rate and other laboratory measurements. The semen in general is good, except for a slight increase in the incidence of abnormal morphology. In other words, the fundamental trouble in such a case is so little evident that it would rarely be discovered without complete diagnostic study. But successes following thyroid treatment are now numerous enough to remove all doubt about the cause and effect relationship of that trouble to infertility. As regards the internal secretion of the testis, at present too little is known to warrant dogmatic pronouncements about its influence on the reproductive processes. Androgenic substances appear to stimulate the accessory glands of the male genital apparatus and also to improve sexual desire and performance. Their effect on spermatogenesis is uncertain.

The chronic intoxications most important with reference to infertility are those which originate within the body from foci of infection, notably in the mouth and in the nasal sinuses. It is a question whether the toxins circulating in the blood stream directly poison the germinal epithelium or whether they act primarily by depressing endocrine function. In favor of the latter hypothesis is the fact that not only in sterility but also in many other disorders the efficacy of organotherapy is relatively diminished as long as chronic focal infections are present. One of the commonest conditions found in sterility cases is chronic prostatovesiculitis. In the past it was thought that this condition depresses fertility by creating an environment hostile to the spermatozoa while they are passing through the genital ducts. To a certain extent that may be true. But since chronic prostatovesiculitis produces in the spermatozoa morphologic abnormalities identical with those caused by focal infections in other parts of the body, we have come to feel that its chief harmful effect results from the action of a constitutional rather than a local mechanism.

While it has repeatedly been shown that one or another type of deficient nutrition can depress the fertility of laboratory animals, there is small reason to believe that the ordinary mixed human diet often has this effect except in cases in which it includes too little protein. Insufficient exercise causes a slowing down of the normal metabolic processes with results, for example lowered fertility and obesity, similar to those produced by metabolic underfunctions of endocrine origin.

Most of the causes of human infertility are due directly or indirectly to environment, and in particular to the artificial conditions of civilized life. One has come to recognize however, a small group of cases in which a hereditary tendency to low fertility, intensified by the accidental mating of individuals possessing that trait, ultimately results in the dying out of their stock. Thus may be explained the barrenness of certain marriages in which neither partner presents any demonstrable obstacle to reproduction. A family history of infertility should always be taken into consideration in formulating a prognosis.

This paper has given a summary of modern views on the fundamental nature of those adverse influences which make conception unlikely or impossible. The number and diversity of such factors indicate that complete diagnostic study is the only basis on which the best results of treatment can be obtained. A project of this sort requires group organization, in which the work of the urologist must be closely correlated with that of his associates in the fields of gynecology, internal medicine and endocrinology.

475 Commonwealth Avenue.

TESTICULAR BIOPSY

ITS VALUE IN MALE STERILITY

CHARLES W. CHARNY, M.D.

PHILADELPHIA

The ever increasing interest in the study of male infertility has stimulated investigation of spermatozoal physiology, semen abnormalities and the pituitary-gonadal relationship, but the microscopic study of testicular tissue, accessible as it is, has been neglected.

An important step in this direction was made by Huhner [1] in 1913, who advocated testicular aspiration as a diagnostic measure in instances of azoospermia. In the performance of this test, recovery of spermatozoa in the testicular aspirate connotes active spermatogenesis despite the absence of spermatozoa from the semen and indicates, by inference, the presence of obstruction in the seminal tract. While this procedure represents a step forward in the study of testicular spermatogenic function, it has its limitations. Irrespective of the caliber of the needle employed for the aspiration, it often happens that no secretion is obtained. Moreover, the specimen of testicular secretion may be devoid of spermatozoa only because the particular seminiferous tubules that were reached were relatively inactive, whereas in other tubules in close proximity spermatogenesis may be advanced. For these reasons, data derived from testicular aspiration are conclusive only if spermatozoa are recovered.

Even when spermatozoa are found, the value of testicular aspiration is limited to the differentiation between obstructive and nonobstructive azoospermia. Lesser faults in spermatogenesis leading to varying degrees of oligozoospermia cannot be investigated by this method.

In order to determine the actual state of testicular function it is necessary to adopt a procedure, such as testicular biopsy, which will allow direct microscopic observation of the seminiferous tubules. As its name implies, testicular biopsy consists of the operative removal of a piece of tissue from the testis, so small as to have no deleterious effect on the gland yet large enough to include a representative group of tubules. This was first performed experimentally by Engle and clinically by Hotchkiss.[2] The application of testicular biopsy to human beings has been generally limited to the differentiation of the two kinds of azoospermia previously mentioned.[3]

In this preliminary report I am privileged to emphasize the simplicity of the technic of testicular biopsy and to recommend its wider application in male infertility.

TECHNIC OF TESTICULAR BIOPSY

The technic of testicular biopsy is simple and can be performed in the office if strict aseptic technic is available.

The testis, with the scrotal skin taut, is held in the operator's left hand. After application of an antiseptic, a portion of the skin overlying the anterior surface of the testis is infiltrated with 1 per cent procaine hydrochloride. An incision about 1.5 cm. long is made through the skin and carefully carried through all the fascial layers until the parietal layer of the tunica vaginalis is opened. This is signalized by the escape of serous fluid and the appearance of the glistening visceral layer of the tunica vaginalis. The latter and the tunica albuginea are nicked with a small scalpel. Gentle pressure on the testis now serves to extrude a small bead of tissue, which is cut off with a curved iridectomy scissors. The testicular incision need not be sutured. The skin is closed with two interrupted catgut sutures and a collodion dressing applied. The patient may return to his former duties the following day, a suspensory being worn for a day or two. The specimen of tissue is preserved in Bouin's solution, mounted in paraffin for section and stained by hematoxylin-eosin.

MICROSCOPIC APPEARANCES IN TESTICULAR BIOPSY

Examination of the normal histologic section reveals a number of seminiferous tubules surrounded by interstitial tissue containing the cells of Leydig. Each seminiferous tubule consists of a connective tissue basement membrane supporting a number of layers of specialized epithelial cells in different stages of spermatogenesis. The deepest layer consists of cubical cells, which enlarge to form spermatogonia. Some of the spermatogonia may be observed in mitosis, forming two or three layers of large polyhedral cells, spermatocytes, which constitute the second zone. The spermatocytes further divide to form the third zone, a layer of small polyhedral cells, spermatids, each of which develops into a spermatozoon. In addition to these three layers there may be seen a number of elongated columnar cells, the cells of Sertoli.

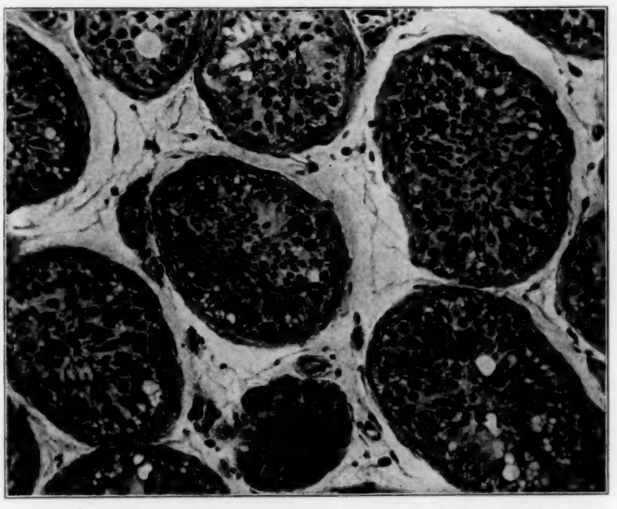

Fig. 1 (case 1).—Normally functioning seminiferous tubules. The three zones are well illustrated. Reduced from a photomicrograph with a magnification of 250 diameters.

It is not my intention to discuss the various pathologic states involving the seminiferous tubules that may be observed. Suffice it to state that they may be generally classified into two groups: those due to incomplete maturation, in which instance cell division stops at the first or second zone, and those caused by degenerative lesions in a fully matured tubule.

CLINICAL APPLICATION OF TESTICULAR BIOPSY

Since testicular biopsy gives the most direct evidence of the actual state of spermatogenesis, it may be utilized to great advantage in any instance in which a pathologic disturbance of the seminiferous tubules is

Read before the Section on Urology at the Ninety-First Annual Session of the American Medical Association, New York, June 14, 1940.

1. Huhner, Max: Sterility in the Male and Female and Its Treatment, New York, Rebman Company, 1913; Aspiration of the Testicle in the Diagnosis and Prognosis of Sterility, J. Urol. **19**: 31 (Jan.) 1928.
2. Engle, E. T.: Personal communication to the author.
3. Lane-Roberts, Cedric; Sharman, Albert; Walker, Kenneth, and Wiesner, B. P.: Sterility and Impaired Fertility, New York, Paul B. Hoeber, Inc., 1939.

suspected. It is especially valuable in male infertility under the following circumstances:

1. In azoospermia, to differentiate between the obstructive and nonobstructive types.

2. In oligozoospermia, to determine the severity of the pathologic process and to differentiate between faults in spermatogenesis and postinflammatory obstructive lesions of the ejaculatory ducts.

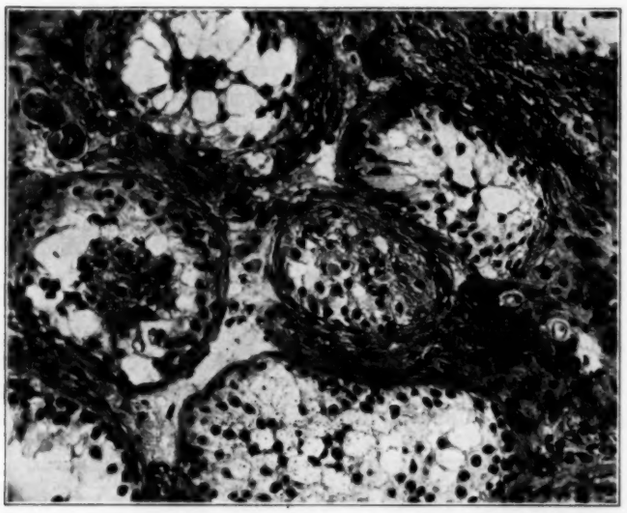

Fig. 2 (case 2).—Degenerative changes in the seminiferous tubules. Reduced from a photomicrograph with a magnification of 250 diameters.

3. As a prognostic gage, to observe the severity of the pathologic process and thus determine the capacity of the tubules to regenerate.

4. As a therapeutic gage, to evaluate by repeated biopsies the efficacy of the various extracts recommended for stimulation of spermatogenesis.

Accordingly, I have performed testicular biopsy on a series of forty infertile patients presenting various types of semen abnormalities. No untoward reactions were encountered. While the number of patients is still too small to permit any generalizations, the value of the procedure in male infertility and the justification for its further application are well illustrated by the following sample case reports:

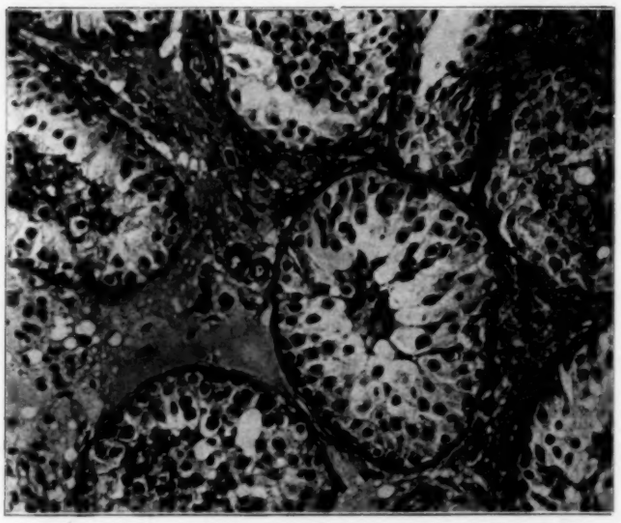

Fig. 3 (case 3).—Immature seminiferous tubules. Central tubule shows failure of development of the third zone. Reduced from a photomicrograph with a magnification of 250 diameters.

GROUP 1. REPORTS ILLUSTRATING THE VALUE OF TESTICULAR BIOPSY IN AZOOSPERMIA

CASE 1.—J. D., aged 29, had a small left testis and an indurated lower pole of the epididymis in an otherwise normal right testis. Semen examination revealed azoospermia. Testicular biopsy revealed failure of development of the seminiferous tubules on the left side. The right testis showed functioning tubules with normal differentiation of the lining epithelial cells (fig. 1). Epididymovasostomy was therefore performed on the right side. Microscopic examination of the secretion obtained from the upper pole of the right epididymis, during the course of the operation, revealed numerous spermatozoa, corroborating the observations of the testicular biopsy.

CASE 2.—J. R., aged 32, had had bilateral gonorrheal epididymitis. Physical examination revealed induration in the lower poles of both epididymides. Testicular aspiration yielded no spermatozoa on the left side and from 2 to 3 spermatozoa per high power field on the right. Testicular biopsy revealed poorly functioning tubules bilaterally, indicating that the semen would be deficient in spermatozoa even if the obstruction was relieved (fig. 2). Operation was not advised.

Without testicular biopsy it would not have been possible in these two cases to determine the state of spermatogenesis and the advisability of operation.

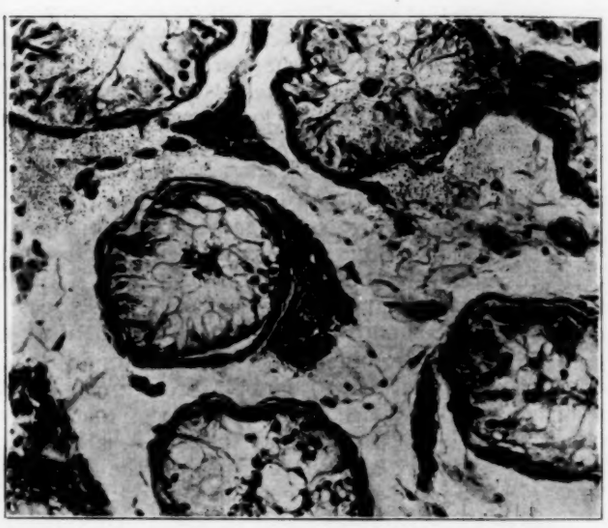

Fig. 4 (case 5).—Atrophy of the seminiferous tubules. Note normal appearance of cells of Leydig. Reduced from a photomicrograph with a magnification of 250 diameters.

GROUP 2. REPORTS ILLUSTRATING THE DIAGNOSTIC VALUE OF TESTICULAR BIOPSY IN OLIGOZOOSPERMIA

CASE 3.—B. F., aged 24, had had gonorrheal infection apparently cured before marriage. Physical examination was negative except for an indurated left seminal vesicle. Prostatic infection was present. Semen examination revealed a volume of 2.5 cc., 6,800,000 spermatozoa per cubic centimeter and 43 per cent abnormal forms. Testicular biopsy revealed failure of maturation of most of the tubules, indicating the need for stimulation of spermatogenesis (fig. 3).

CASE 4.—J. K., aged 42, had from 15 to 20 white blood cells per high power field in the prostatic secretion. The semen was very viscid and had a volume of 1.5 cc., a count of 1,200,000 spermatozoa and 12,000,000 white blood cells per cubic centimeter. Testicular biopsy showed actively functioning seminiferous tubules. It was therefore concluded that the reduction in semen volume and sperm count was due to ejaculatory duct obstruction occasioned by a long standing seminal vesiculitis. Treatment was therefore directed toward the elimination of the chronic infection.

As illustrated by both cases, testicular biopsy serves to differentiate between the obstructive and nonobstructive types of oligozoospermia. In the first instance (case 3) the oligozoospermia was proved to be the

result of faulty spermatogenesis as shown by the state of the seminiferous tubules (fig. 3). In the second instance (case 4) it may be inferred from the finding of normal testicular tissue that the oligozoospermia was obstructive in origin. I am firmly convinced that, in many instances, oligozoospermia is caused by ejaculatory duct atresia rather than faulty spermatogenesis.

GROUP 3. REPORTS ILLUSTRATING THE VALUE OF TESTICULAR BIOPSY AS A PROGNOSTIC GAGE

CASE 5.—M. L., aged 30, had had bilateral orchidopexy at the age of 16 for cryptorchism. Physical examination was negative. The semen showed azoospermia. Testicular biopsy revealed tubules lined by a single layer of undifferentiated cells and filled with acellular hyaline shreds, corroborating the clinical impression of irreparably damaged seminiferous tubules (fig. 4).

CASE 6.—T. M., aged 27, had had bilateral orchitis complicating mumps at the age of 19. Examination revealed testes of normal consistency but reduced in size. The semen had a volume of 4.5 cc. with 3,500,000 spermatozoa per cubic centimeter. Testicular biopsy revealed complete atrophy of the seminiferous tubules on the right side. On the left, islands of normally functioning seminiferous tubules were found interspersed among atrophied tubules (fig. 5). The impression gained from this observation was that the tubules which had escaped destruction were already functioning at full capacity and that further stimulation was useless.

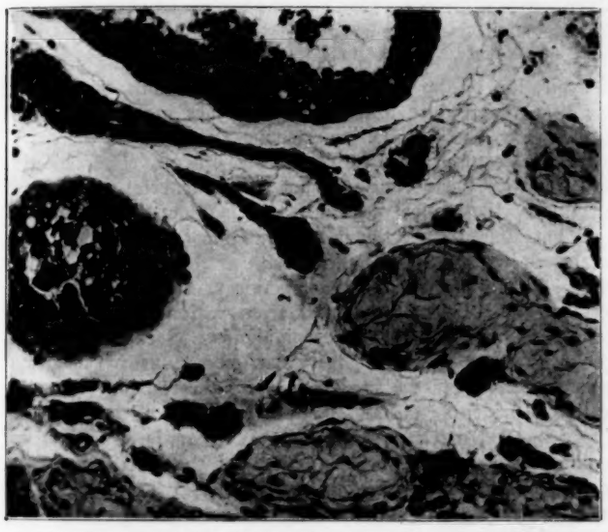

Fig. 5 (case 6).—Islands of normally functioning tubules interspersed among completely atrophied tubules. Note persistence of cells of Leydig in the atrophied area. Reduced from a photomicrograph with a magnification of 250 diameters.

It is obvious that no regeneration can be expected in seminiferous tubules that have undergone complete atrophy, no matter how effective the therapeutic agent may be.

GROUP 4. REPORTS ILLUSTRATING THE VALUE OF REPEATED TESTICULAR BIOPSIES AS A CRITERION OF THE EFFICACY OF THERAPEUTIC AGENTS

CASE 7.—O. D., aged 24, was normal except for an infected prostatic secretion. The semen volume was 2.5 cc., with 4,600,000 spermatozoa per cubic centimeter. The patient was given intramuscular injections of 400 international units of gonadotropic hormone of pregnant mare serum three times weekly for a total of 12,000 international units. Reexamination of the semen following treatment showed no improvement (a volume of 2.5 cc. and a sperm count of 4,300,000 per cubic centimeter). Comparison of the testicular biopsies performed preliminary to and following the treatment, however, showed a definite improvement in the histologic picture of the seminiferous tubules (figs. 6 and 7).

COMMENT

The performance of testicular biopsy before and after a given form of therapy yields more direct evidence of the efficacy of that remedy than any other method in use at the present time. While repeated examination of the semen furnishes evidence of the degree of progress as a result of treatment, it is not an accurate yardstick because changes in the semen may occur which are produced by factors unrelated to the process of spermatogenesis. Reduction in the sperm count may, for instance, be produced by excessive frequency of coitus or by incomplete ejaculation resulting from the patient's difficulty in obtaining a specimen at an appointed time. Thus, an apparent increase in sperm population after a period of treatment may be merely the result of an improved method of collection of the specimen occasioned by repeated attempts.

Fig. 6 (case 7).—Poorly functioning seminiferous tubules. Sperm count 4,600,000 per cubic centimeter. Reduced from a photomicrograph with a magnification of 250 diameters.

Fig. 7 (case 7).—Appearance after administration of 12,000 international units of gonadotropic substance of pregnant mare serum. Reduced from a photomicrograph with a magnification of 250 diameters.

On the other hand, increased cellular activity in the seminiferous tubules effected by therapy and demonstrated by testicular biopsy is true evidence of the effectiveness of the agent employed. Thus far I am subjecting only one product, gonadotropic hormone of

pregnant mare serum,[4] to this critical investigation.

To date a total of five patients presenting varying degrees of faulty spermatogenesis, as judged by semen examination and testicular biopsy, were subjected to repeated testicular biopsies during the course of treatment. Each patient was given 400 international units of gonadotropic hormone of pregnant mare serum intramuscularly, three times a week for three weeks. Subsequent injections were administered intravenously thrice weekly for approximately two additional months, at which time a second testicular biopsy was done.

The observations on the five patients are summarized in the accompanying table. It is of interest to note that, although only three of the five patients showed an improved semen picture following the mare serum hormone therapy, all the patients presented histologic evidence of stimulation of the seminiferous tubules. These results, although limited to a small number of observations, are sufficient evidence to suggest that the administration of hormone of pregnant mare serum deserves further trial as a spermatokinetic agent.

Observation of the Spermatokinetic Effect of Gonadotropic Hormone of Pregnant Mare Serum in Five Infertile Males

	Before Treatment		After Treatment		
Patient	Semen Volume in Cc.	Sperm Count per Cc.	Semen Volume in Cc.	Sperm Count per Cc.	Changes in Tubular Activity as Observed by Testicular Biopsy
1. G. C.	2.5	16,400,000	3.5	29,600,000	Increased
2. D. M.	1.0	1,100,000	2.0	2,900,000	Increased
3. O. D.	2.5	4,600,000	2.5	4,300,000	Increased
4. J. B.	3.5	500,000	5.0	6,400,000	Increased
5. D. K.	3.5	10,100,000	3.0	29,000,000	Increased

CONCLUSIONS

1. Testicular biopsy is a simple, innocuous procedure as shown by its application in forty infertile patients without a single mishap.

2. Testicular biopsy is not only a definite diagnostic aid in differentiating between obstructive and nonobstructive semen defects but serves a prognostic function as well.

3. When performed before and after treatment, testicular biopsy yields the most direct evidence of the efficiency of the therapeutic agent employed.

1825 Pine Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. KREUTZMANN, DRS. MEAKER AND VOSE AND DR. CHARNY

DR. ROBERT S. HOTCHKISS, New York: Drs. Meaker and Vose exemplify what can be accomplished by team work between the two specialties of urology and gynecology. A complete history and careful general physical examination are as much a part of the examination of the husband as the semen studies. The new phrase "the inherent strength of the germ cell" is expressive. Not only do men differ greatly from one another in their state of fertility but certain men are particularly unstable and sensitive to adverse influences. A group of twenty-two men that I have studied for over a year demonstrates that those individuals who have unstable sperm counts are more apt to react violently to transient illnesses. The effect is not fully registered in the semen for from forty to sixty days. The clinical inferences are quite obvious. Dr. Charny's report on testicular biopsy promises much. This simple painless diagnostic procedure should be carried out as a preliminary step whenever doubt exists as to whether the azoospermia is due to aspermatogenesis or occlusion of the seminal tract. Normal size and consistency of the testicle is no assurance that spermatozoa are being produced. If active and satisfactory spermatogenesis is observed in the section of the biopsy specimen and there is reason to believe that the obstruction is in the scrotal area there is no need for further diagnostic tests. Injection of the vasa with colored solutions does not test the usual and likely site of the obstruction, which is most apt to be in the globus minor of the epididymis. Furthermore, additional scar and occlusion may be produced at the site of the vasa puncture. If the biopsy specimen demonstrates grossly defective spermatogenesis, time and expense are saved. The knowledge of the endocrines as related to spermatogenesis is far from satisfactory. We have no entirely reliable, accurate and inexpensive tests to measure the functions of the ductless glands. Microscopic study of these testicular biopsies will ultimately allow one to predict which type of spermatic deficiencies will be amenable to endocrine stimulation. Should Dr. Charny's work lead to such an important advance, much of Dr. Kreutzmann's valid objection to indiscriminate treatment will be overcome. Second only to the importance of proper selection of the patient is the problem of maintaining patency at the site of the anastomosis. Drs. Draper, Kauer and I have recently undertaken a modification of the Martin operation designed to reduce or prevent postoperative stricture. Experiments on dogs convinced us that large gage silver wire can be left within the vas for weeks without producing important tissue irritation.

DR. MAX HUHNER, New York: As regards the criticisms of aspiration of the testicles with a needle, I have performed this simple procedure for over thirty years in scores of cases without any bad results. Nor have there been reported in medical literature any bad results by others. The objection made by Dr. Charny that I do not obtain material from several portions of the testicle does not hold in view of the fact that I do not simply stick the needle into the body of the testicle but insert it through the entire length of the testicle as well as the epididymis and continue the suction as I slowly remove the needle, so that I obtain samples from various portions of the testicle as well as from the epididymis. Such an objection would be more patent in testicular biopsy, as he obtains a specimen only from the small portion of the testicle just underneath his 1.5 cm. incision. I can see, however, that with the biopsy method much needed information can be obtained concerning the physiology and pathology of the testicles. I have not as yet done a testicular biopsy because I have obtained so much information from the simpler method of aspiration. By this method we can diagnose in any case of azoospermia whether the condition is due to occlusion of the genital tubes or to lack of spermatogenic function of the testicles or both. With my method I was the first to show as early as 1924 that an infection could be so slight as not to produce the characteristic nodules of an epididymitis but might still be severe enough to cause an occlusion of the genital tubes. Dr. Kreutzmann has covered the ground in an exhaustive manner. I am sorry that he did not mention the deleterious effect on the function of the testicle produced at times with the x-rays. If we do not think of this condition we shall not make the proper diagnosis, as the testicles feel perfectly normal; therefore the statement that when the testicles feel normal the lack of sperm is due to obstruction needs modification. Dr. Kreutzmann has very properly mentioned the condition of hypospadias as at times a cause of sterility. I wish to emphasize more fully than he did that the mere fact of a hypospadias being present, even if extreme, does not by any means indicate that that is the cause of the sterility. The only way one can diagnose this is by the postcoital or Huhner test, which, by the way, is a test for sterility in the male just as much as in the female. If after coitus one finds numerous spermatozoa in the female cervix one at once knows that a hypospadias, no matter how severe, has nothing to do with the sterility. Dr. Meaker and Dr. Vose for several years have covered the subject of sterility in all its aspects and have added much valuable information of their own. The most essential point which they have brought out is the value of group diagnosis especially as initiated and perfected by them.

4. Supplied by the Schering Corporation.

DR. HENRY SANGREE, Philadelphia: Fertility is a divided responsibility equally between the husband and the wife. To date the wife has been assigned most of the blame in a barren marriage. My investigations show that the male partner is at fault in about 50 per cent of childless unions. Team work should be present in a study of infertility and should include a gynecologic, obstetric, urologic, roentgenologic, endocrinologic and laboratory survey. The urologist by training and experience is particularly fitted to examine and treat the male partner in a sterile marriage. Between two and nine factors are often present in a study of both partners. In a study of the first hundred consecutive cases, among the congenital abnormalities were three cases of hypospadias, two cases of cryptorchism and four cases of Froelich's syndrome with atrophy of genitalia. Chronic prostatitis occurred in twenty-one. I consider this an important cause of the lowering of the fertility index and believe treatment should be given for this condition. The thick, viscid ejaculate and infective pus in a grade 1 to a grade 5 prostatitis appears to entangle and immobilize spermatozoa in the same comparative proportion that the viscid pus from a chronic endocervicitis causes sterility in the female. Epididymis-vasostomy has been done in 3 per cent of my cases with one success. Two of the men gave a history of scrotal trauma, one with a football injury and one during his work in a factory. In each of these cases a small threadlike vas was present on the side of trauma, and in the opposite side a small hydrocele was present of about 15 cc., not diagnosed preoperatively. Both had azoospermia and only a few mobile sperm were found in one of the cases at the operating table. An innovation in procedure was instituted in the last operation. The wife was also brought into the operating room, timed thirteen days after the beginning of her menstruation, which the gynecologists tell us is the optimum time, and artificial insemination was done before anastomosis, with sperm from the epididymis. Unfortunately this is without success to date. Impotence not only is the inability of insemination but includes failure of the erector mechanism. Two patients were successfully subjected to the impotence operation devised and perfected by Dr. Lowsley of New York. They were both hospitalized and were given a most thorough medical, endocrine and psychiatric preoperative examination. Endocrine investigation has made rapid strides in the last decade. It is deplorable that no simple practical test has been devised for the anterior lobe of the pituitary gland. The Fluhmann test in either the blood or the urine has not been satisfactory in my hands. Though not particularly emphasized to the present time, basal metabolism tests should be done as a matter of routine. Twenty-one cases of hypothyroidism occurred ranging from minus 5 to minus 42. The careful survey, group endeavor and treatment of both partners in childless marriages will lead to a greater percentage of successful results.

DR. W. W. WILLIAMS, Springfield, Mass.: I am interested in the emphasis which has been placed on azoospermia and aspermia, since the semen analysis of 110 consecutive cases from sterile matings in my series revealed only one case in which no spermatozoa were delivered. The low incidence of aspermia in this series is possibly because some of the patients avoided general sterility studies. There were others whose spermatozoa were so scarce that they were difficult to find, and the density of the spermatozoa or the count varied markedly through the whole series. It is often difficult to say just what is responsible for the deficiency of spermatozoa and the abundance of abnormal cells which occur in these samples. Out of a group of twenty-one cases in which the basal metabolic rate had been determined in addition to the studies on spermatic pathology, two were so deficient in spermatozoa that they could not be examined for pathologic changes. Of the nineteen which were examined, seven showed a minus basal metabolic rate of 10 per cent or below, and the other twelve a basal metabolic rate of higher than 10 per cent. The low group showed an average of 30 per cent pathologic cells and the more normal group 27 per cent, which in a small series of this kind would be fairly normal fluctuation. This does not in the least indicate that thyroid deficiency may not be a factor. In some of these cases there was a very low basal rate and possibly the thyroid was a factor in causing spermatic anomalies; but certainly it is not very well proved. There is another point which has a bearing on the appearance of azoospermia: It was generally noted in this series that the rate of spermatogenesis was lowered in cases in which there were increased numbers of pathologic forms. As the rate of spermatogenesis diminished, the rate of formation of pathologic cells increased. Had the decreased number of spermatozoa in the semen occurred as the result of a stenosis of the passages, one would expect that the ratio of abnormal forms would not have been increased.

DR. HENRY A. R. KREUTZMANN, San Francisco: Some phases of sterility in the male can be diagnosed and treated only by the urologist. It is therefore most important that the urologist establish a thorough method of diagnosis and treatment in these cases. Dr. Hotchkiss's statement that the injection of a needle in the vas may produce stenosis at that point is well taken. I have had the opportunity in a number of cases to examine the vasa months after such injections had been made and have found that the lumen in no instance was occluded by the introduction of the needle. I feel that injection of the dyes is a simple and effective way of determining the patency of the vas, particularly when the needle is inserted as near the globus minor as possible. Infections of the vas deferens are much more common than is realized, as we showed in a paper on this subject presented before the American Urological Association in Minneapolis in 1937. The majority of the patients in whom cultures of the vasa were positive had no symptoms and the vasa appeared normal on gross examination, yet the lumen in many instances was completely blocked, preventing the passage of a silkworm strand. With regard to the number of cases showing no sperm, the number varied between 12 and 15 per cent. Sterility is an important subject for both men and women and I feel that in the future the urologist cannot perform all the necessary examinations himself, as there are too many factors involved. The ideal way of solving this problem and obtaining the best results is to have the urologist associated with a laboratory man who is conversant with studies of the sperm, a gynecologist and an endocrinologist.

DR. CHARLES W. CHARNY, Philadelphia: Two patients with oligospermia illustrate the value of testicular biopsy in sterility. The first had a count of 4,600,000 spermatozoa per cubic centimeter with a large percentage of abnormal forms. Microscopic examination revealed the poor differentiation of the epithelium lining the seminiferous tubules, corresponding to the defective sperm population. The second patient had a count of 2,300,000 spermatozoa per cubic centimeter with only 18 per cent abnormal forms but with evidence of marked adnexal infection. Microscopic examination disclosed more active spermatogenesis than the previous one, and yet the sperm count was actually lower, serving to support the theory that a great number of patients with low sperm counts in the ejaculate possess testes undergoing normal spermatogenesis.

DR. FRANCIS R. HAGNER, Washington, D. C.: Dr. Hotchkiss spoke of the use of a splint in the vas deferens. I don't believe that the vas deferens has anything to do with the failure in my cases when it is open at the time of operation. I believe that the trouble is in the cut tubules, and I have always felt that any foreign body left in situ for any length of time rather tends to form fibrous tissue and there is more chance of preventing this sinus forming between the cut ends of the tubules and the vas deferens. I am not opposed to it at all. I am going to try it, but that has just been my reaction to it as it has been done before. Dr. Huhner reported the single case in which the epididymis was punctured for examination, with a report of live spermatozoa being found. When I operated on the man while he had the small abscess, the other epididymis was absolutely structureless. It was red and looked almost like a piece of liver. I felt that possibly the introduction of the needle had some effect. That is the only case in which I have operated in which previous puncture had been done. I used dye at the time of operation early in my work. It might be all right to use it before operation, but at operation everything gets messed up with it and one can't make the tissues out as well. So I gave it up at the time of operation. I also feel that if the occlusion in these patients is farther up than one can get a silk gut probe, one can't do anything for those cases in the operative procedure from the lower end.

ASTHMATIC BRONCHITIS FOLLOWING CHRONIC UPPER RESPIRATORY INFECTION

A FIVE YEAR STUDY OF 235 CONSECUTIVE CASES SEEN IN PRIVATE PRACTICE

LEE BIVINGS, M.D.
ATLANTA, GA.

In the presentation of this material I do not wish to disparage the study of bronchitis of allergic origin but to call attention to the frequency of chronic infection of the upper respiratory tract especially when accompanied by bronchitis with wheezing, which is subsequently referred to as asthmatic bronchitis. This clinical entity occurs frequently in pediatric practice and I shall attempt to define it and to show that it is primarily an infectious process. In a review of recent medical literature [1] and in textbooks [2] it seems to be considered a part of asthma, but while it may occur in the asthmatic child it would seem distinct and different from allergy unless bacterial hypersensitiveness may be considered an allergic phenomenon.

Any group of symptoms which distinctly impair the health of the child certainly should be honored as a clinical entity. When chronic upper respiratory infection becomes severe enough to cause the following symptom complex, it has attained the classification of a definite disease:

SYMPTOM COMPLEX

The symptom complex which occurs almost exclusively in winter, consists of:

1. Cough, often paroxysmal in character, resembling whooping cough, occurring usually in the early morning or when retiring, rarely during the day unless after severe exertion.
2. Malodorous breath, especially in the morning.
3. Anorexia and loss of weight.
4. Recurring colds.
5. Abdominal pain and nausea.
6. Profuse night sweats (not present in all cases).
7. Bronchitis, frequently unilateral, more likely to occur if the condition has existed for some time.

Physical examination reveals that:

1. The child appears anemic and suffering from malaise.
2. Fever is usually present to a slight degree.
3. The nasal mucosa is engorged and red with a coating of mucopurulent secretion. Frank pus is often seen in the floor of the nasal passages.
4. The tongue is heavily coated.
5. The pharynx is red with islands of lymphoid tissue appearing prominently. A mass of mucopurulent material is often seen behind the soft palate.
6. Resistance to pressure is often found in the right upper quadrant of the abdomen.

Laboratory examination reveals:

1. Severe secondary anemia present in almost all cases and often as low as 45 per cent (Newcomer).
2. A slight rise in the total white cell count and a slight increase in the relative neutrophil count.
3. Usually absence of eosinophils in increased amounts on nasal smears stained with Wright's stain.
4. Usually pure culture of streptococci or staphylococci or a mixed growth of these two organisms on culture of the nasopharynx.

ASTHMATIC BRONCHITIS

During the first few years of life attacks of bronchitis are often accompanied by wheezy respiration and the physical signs characteristic of asthma. Attacks of this kind are often spoken of as "asthmatic bronchitis." [3]

They differ from asthma:

1. In being continuous rather than paroxysmal.
2. In the constant presence of a local infection.
3. In the failure to respond satisfactorily to epinephrine.

Allergy seems to play little part in their production. Specific sensitiveness cannot be demonstrated. Nor is there eosinophilia.

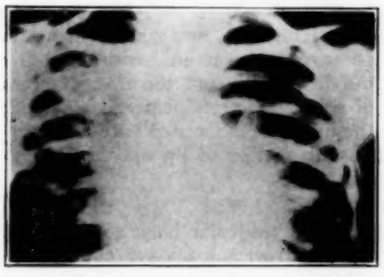

Fig. 1.—Infiltration of right upper lobe, February 19.

Fig. 2.—Little change in right upper lobe, February 22, with increasing reaction in left lower lobe.

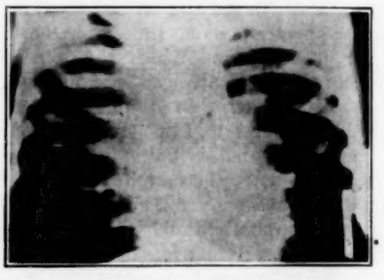

Fig. 3.—Considerable clearing of infiltration, February 27, leaving behind a peribronchial reaction and a number of discrete glands.

BACTERIOLOGY

Cultures taken from the nasopharynx by sterile loop and grown in bouillon incubated over twenty-four to forty-eight hours and stained with Gram's stain or grown on blood agar yielded streptococci (viridans and hemolytic) thirty-eight times, staphylococci (aureus and albus) nineteen, catarrhalis four, staphylococci and streptococci ten, streptococci and pneumococci once and a gram-negative rod once; total, seventy-three.

EFFECT OF TONSILLECTOMY

Operations for removal of tonsils and adenoids had been done in 30 per cent of the cases; it would seem that the operation has no beneficial effect on the course of the infection or in preventing recurrences.

INFLUENCE OF SEX

There were 110 girls and 125 boys.

COMPLICATIONS

Asthmatic bronchitis occurred in approximately 35 per cent.

Otitis media was present in approximately 3 per cent.

Read before the Section on Pediatrics at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Mitchell, A. G., and Cooper, M. L.: Vaccine Treatment of Asthma in Childhood, Arch. Pediat. **48**: 751 (Dec.) 1931.
2. Griffith, J. P. Crozer, and Mitchell, A. Graeme: Diseases of Infants and Children, Philadelphia and London, W. B. Saunders Company, 1937, p. 691.
3. Holt, L. Emmett, and Howland, John: Holt's Diseases of Infancy and Childhood, revised by L. Emmett Holt Jr. and Ruskin McIntosh, ed. 10, New York and London, D. Appleton & Co., 1933, p. 754.

Recurrences were experienced in seventy-one cases, or 30 per cent.

TREATMENT

1. *Supportive.*—A generous diet was prescribed, with cod liver oil, increased rest and definite treatment of the anemia. This seemed best accomplished by oral administration of from 6 to 9 grains (0.4 to 0.6 Gm.) of crystals of ferrous sulfate in a vehicle (elixir) of thiamine hydrochloride containing 250 units per teaspoon.

2. *Local Treatment.*—Nasal tampons of 1 per cent ephedrine were used for ventilation and drainage. In some instances in which the discharge was profuse, a Sondermann suction pump was used twice daily at home by the mother.

3. *Foreign Protein Therapy.*—Autogenous vaccines were first used and abandoned because the results did not seem to justify the increased cost to the patient. It is also probable that the bacterial count was too low. Stock vaccine (mixed) of a very high count was then used with a high percentage of good results. In the last few months I have been taking cultures in every case and using a mixed autogenous vaccine of a high count which matched the culture of a given case. For instance, if the culture showed streptococci, a streptococcus vaccine was given in a dosage of 0.2 cc., increasing 0.1 cc. each dose to a maximum of 1 cc. at three day intervals for the first four doses and weekly intervals for a total of from six to ten doses. Staphylococcus toxoid (No. 2 dilution) was used in some instances of staphylococcic infection.

4. *Chemotherapy.*—Sulfanilamide proved useful in the acute cases of asthmatic bronchitis but seemed valueless in the chronic infection.

RESULTS

The child usually remains relatively free from infection for months and sometimes years. A few children do not respond to treatment.

CONCLUSIONS

It would seem that the problem of treating these children is far more than one of local nasal treatment but one of deficient immunity with subsequent ill effects on the well-being of the whole body. All these factors must be considered in restoring the child to a normal state of health. The frequency of occurrence, the wintertime incidence, the presence of fever, the constant presence of infection, the absence of eosinophilia and the response to specific vaccine therapy would seem to entitle this clinical syndrome to a place of its own in pediatric practice, making it amenable to the care of any pediatrician and separating it from the field of allergy except when it occurs in the asthmatic in spite of the asthma and not because of the asthma.

REPORT OF CASE

The following brief summary of the history and physical examination,[4] with three roentgenograms, illustrates some of the characteristics of asthmatic bronchitis:

Barbara D., seen in February 1940, aged 4½ years, complained chiefly of wheezing and fever. Asthma had been present in a grandmother and an uncle. The tonsils were removed in 1938. The patient had pneumonia in 1938 and 1939 similar to the present illness. Physical examination revealed congestion in the nose, moist rales over both lungs posteriorly and the right upper lung anteriorly. There was an expiratory wheeze. Laboratory examination revealed hemoglobin 83 per cent, red blood cells 5.08 million and white blood cells 11,500 with 73 per cent polymorphonuclear neutrophils. The urine was normal. A tuberculin test was negative.

4. By courtesy of the Eggleston Hospital for Children.

COMMENT

The history of repeated pneumonias is common. The history of allergy in the family is not common. The onset with a cold, fever and wheezing is common. The physical signs are characteristic. The blood picture of an increase in the total white count of moderate degree and slight rise in the neutrophil count is the usual finding. The negative tuberculin test is important, since there is often suspicion of tuberculosis, so reported by the roentgenologist. X-ray examination February 19 (fig. 1) showed infiltration of the right upper lobe. February 22 (fig. 2) there was little change in the right upper lobe and an increasing reaction in the left lower lobe. This may have been a tuberculous pneumonia. By February 27 (fig. 3) the infiltration had cleared considerably leaving behind a peribronchial reaction and a number of discrete glands. "I still feel that this was a tuberculous pneumonia" (roentgenologist's opinion).

These roentgenograms illustrate the changing position of the pathologic condition in the lungs so often seen in asthmatic bronchitis, the most common location being in the left lower lobe posteriorly, where the bronchitis is characteristically unilateral.

The peribronchial reaction is also characteristic and often results in a roentgenographic diagnosis of juvenile or childhood tuberculosis.

20 Fourth Street N.W.

ABSTRACT OF DISCUSSION

DR. HAL M. DAVISON, Atlanta, Ga.: All children showing the syndrome described by Dr. Bivings should be treated as he has suggested. If the treatment is not successful, the patient should undergo thorough allergic study. No one, seeing the work of Jackson in Philadelphia, would doubt that there is some relation between bronchiectasis and chronic bronchial infections and infections in the sinuses. Wolf and others have shown that there is a definite drainage from the sinuses into the bronchial and mediastinal lymph nodes, so we cannot argue the relationship between infection in the upper respiratory tract and infection in the lungs. Among adult asthmatic patients the presence of chronic sinus infection detracts from their chances of relief, and x-ray treatment sometimes gives the only relief that can be produced. I have seen a few cases of asthma in children relieved by x-ray treatment for enlarged mediastinal nodes, after other treatment had failed. On the other hand, among both children and adults, numbers of cases apparently infectious do not improve until treated for allergy, and, after definite allergic treatment has been carried out, the infection disappears. No one can explain just why 35 per cent of Dr. Bivings's children should wheeze and 65 per cent should not wheeze. There must be a definite difference between such groups. Allergic sensitivity cannot be demonstrated in all these cases of wheezing, but that does not mean that it is not there. I have seen some adults with seasonal fall hay fever who give no positive cutaneous reactions yet obtained perfect results from ragweed pollen extract and have recurrence of symptoms if not so treated. The absence of eosinophilia is of little help in diagnosis here. Piness of Los Angeles, Bray of London, and Kern and Crompton of Philadelphia have presented results of research on the confusing pictures certain allergic syndromes in children offer in resembling pneumonia, and the resemblance of certain initial mucosal changes of infection to those of allergy. Therefore, since we frequently cannot determine whether these children are allergic, whether they are allergic to the infection or to something else, it seems that individual indications would be the logical procedure of handling.

DR. WARREN QUILLIAN, Coral Gables, Fla.: The symptom complex described by Dr. Bivings and classified under the title of asthmatic bronchitis occurs frequently in pediatric practice.

A recent review of about 2,000 case records in the lower coastal region of Florida indicates that 47 per cent of this series consists of respiratory infections (Quillian, W. P.: Respiratory Infections, *J. Pediat.* **15**:704 [Nov.] 1939). Many children, brought to this resort center during the winter months in an effort to avoid sudden extremes of temperature, continue to have mild infections of the upper respiratory tract. But a large percentage of these patients who have previously experienced successive attacks of asthmatic bronchitis as a complicating factor find relief. The combined clinical experience of several pediatricians in this area confirms this impression emphasized by the author today concerning the predisposing effect of cold weather. Chronic disease of the paranasal sinuses is often discovered in this clinical syndrome. It is possible that constant absorption from such a low grade focal infection may create a bacterial allergy. The mucopurulent material may drip into the pharynx and by continuity of tissue involve the lower respiratory tract. There seems to be a lowered immunologic response among these patients. A high incidence of allergy in the family history makes one feel that there is an altered constitutional make-up. Otherwise, more children with chronic upper respiratory infections would develop asthmatic bronchitis. There is no substitute for careful physical examination. Permanently good results from therapy may depend on careful elimination of predisposing factors. In the use of autogenous vaccines one should bear in mind the changing bacterial flora of the nose and throat. A vaccine which is effective this year may require modification the next. All supportive measures designed to create a normal immunity to infection may be worthy of trial in the individual case. My experience confirms the belief expressed by the author that asthmatic bronchitis is a distinct clinical entity. The results from therapy have too often been a temporary amelioration of symptoms without permanent relief from the syndrome.

DR. HARRY LOWENBURG JR., Philadelphia: Dr. Bivings stated that the vaccine which he prepared contained 4 billion organisms in each cubic centimeter. In the past two years I have had occasion to take cultures of the nose and throats of more than a hundred children with chronic sinus infections, many of them associated with asthmatic conditions. In only three of these children did I get a pure culture, and in the subsequent production and administration of the vaccine I found that those children who had an associated asthmatic condition could not tolerate a dose of much more than 5 million organisms at the start of the course of injections. These children would receive severe local and occasionally general reactions even with such small doses. It has been my custom to have the vaccine made up with 500 million organisms to the cubic centimeter and give about a million organisms as an initial dose. The method of preparation of the vaccine that I have used was taught to me by Dr. Cooper at the Children's Hospital in Cincinnati. The individual organisms obtained are made into a separate vaccine. The patient is then skin tested with a small dose of each organism and, depending on the reaction obtained in twenty-four hours, the combined vaccine is prepared directly in proportion to the severity of the reactions. It has been my experience that those children giving the more severe reactions to the cutaneous tests derived the greatest benefit from the injections. There has been mentioned this morning the factor of undernutrition in these children. I have noticed that many of these children, instead of being undernourished, are on the obese side, and have found that with reduction in weight their general resistance has seemed to improve a great deal.

DR. FRANK LEE BIVINGS, Atlanta, Ga.: I want to emphasize two main points with regard to this study: First, that chronic upper respiratory infection in children is a very frequent occurrence; second, that asthmatic bronchitis primarily is infectious in origin, although there may be an allergic background which is a complicating or in some instances a predisposing factor. But it seems to me that asthmatic bronchitis as a clinical entity must be considered a bacterial infection and treated as such. Dr. Quillian brought up a point with regard to changing bacterial flora. I have not gone quite far enough yet to have definite data on that subject, but in some of the children on whom I have made bacteriologic studies I have found that one time they may have a streptococcic infection predominating and in the next instance a catarrhalis or some other type of infection. Therefore the autogenous vaccine and culture preceding each treatment would seem to be indicated. My experience has not been the same as Dr. Lowenburg's in regard to bacterial count. My vaccine was begun with low counts and the results were not entirely satisfactory, and for that reason the counts were increased. If one remembers that pertussis vaccine, on which so many rely, has a count of 20 billion to the cubic centimeter, one need not fear severe reactions in these children. I have not seen reactions occur after the first dose, except in unusual instances. I usually start them with about 0.25 cc. of a 6 to 8 billion count. In this study I tried to simplify the bacteriologic studies as much as possible. I did not go as far as Dr. Lowenburg said he had, because I am doing private practice and have to do these things as simply as possible. With the cooperation of the Emory University Department of Bacteriology I have worked out a technic by which I thought I could get good clinical results without having to go into detailed bacteriologic studies. For that reason I culture and grow the predominating organism and try to identify it as simply as possible and use that vaccine. My experience with regard to nutrition in these children is different from that of Dr. Lowenburg. I think he has in mind the asthmatic child rather than the asthmatic bronchitis child, because in those that I have seen the nutrition certainly had been far below normal in almost every instance, and one of the most noticeable clinical improvements is the rapid gain in weight that these children get after they have been treated.

INTRAMURAL POSTGRADUATE EDUCATION IN OBSTETRICS AND PEDIATRICS

FOR PRACTICING PHYSICIANS, FINANCED IN WHOLE OR IN PART FROM FUNDS APPROPRIATED BY CONGRESS FOR MATERNAL AND CHILD HEALTH SERVICES

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Short clinical postgraduate courses in obstetrics and pediatrics have been established by several state health departments in cooperation with medical schools and hospitals with teaching services. These courses have been developed for practicing physicians who wish an opportunity to observe and learn of the most recent advances in obstetrics and pediatrics. Where postgraduate courses had already been established the health departments have occasionally provided stipends or tuition or travel to assist physicians otherwise unable to attend the courses. These short courses are not designed to prepare physicians to become specialists in obstetrics or pediatrics.

Of the maternal and child health funds $138,984 has been budgeted by the state health agencies for intramural and extramural medical postgraduate education in obstetrics and pediatrics during the fiscal year ending June 30, 1941. This amount may include for different states either the salaries of instructors or stipends, tuition or travel for the postgraduate students.

The U. S. Children's Bureau, in approving the plans submitted by the states for this purpose, has felt that efforts to improve medical education are one of the most important parts of any program endeavoring to improve the health of mothers and children.

A brief summary of the courses financed in whole or in part from the social security funds is presented here for the benefit of physicians including obstetrics or pediatrics in their practice who may wish to attend such courses.

Courses in Obstetrics and Pediatrics

School	Length and Content of Courses	Date When Courses Begin	Number of Students Accepted for Each Course	Physicians Eligible	Registration Fees and Tuition	Approximate Cost of Room and Board	For Application Forms and Detailed Information, Write to
University of California, San Francisco	One week obstetrics, two weeks pediatrics	Obstetrics, Dec. 16, 1940, June 2, 1941; pediatrics, Jan. 6, 1941, May 19, 1941, June 16, 1941	15	Physicians participating in state maternal and child health programs in California, Arizona, Nevada, New Mexico, Utah	$10 registration fee and $80 tuition (paid by respective state departments of health)	$11 to $12.50 per week	The director of maternal and child health in state health department of California, Arizona, Nevada, New Mexico, or Utah
University of Chicago, Chicago	Five weeks obstetrics only	Aug. 26, 1940, Oct. 7, 1940, Nov. 11, 1940, every five weeks in 1941	5	Graduates of accredited medical schools	$25 registration fee; $10 returned on completion of course	$16 per week	Chief, Division of Child Hygiene, State Department of Public Health, Springfield, Ill.
University of Illinois, Chicago	One week obstetrics and pediatrics combined	Summer months only	18	Physicians practicing in Illinois	$10 registration fee	$15 per week (state health department pays for room, board and travel expenses not exceeding $25 for a two weeks course)	Chief, Division of Child Hygiene, State Department of Public Health, Springfield, Ill.
	Two weeks obstetrics and pediatrics combined	Arranged on application	4	Physicians practicing in Illinois	$10 registration fee		
Indiana University, Indianapolis	Two weeks obstetrics	Nov. 4, 1940, Jan. 13, April 14, July 7, 1941	6	Graduates of accredited medical schools (preference to physicians practicing in Indiana)	$10 registration fee (refunded on completion of course)	Board and room on campus paid for by Indiana State Board of Health for Indiana physicians	Director, Bureau of Maternal and Child Health, State Board of Health, Indianapolis, Ind.
State University of Iowa, Iowa City	One week obstetrics	Alternate weeks Sept. 23, 1940, to June 28, 1941	3	Graduates of accredited medical schools in the United States under 55 years of age	None	$10 to $20 per week	Director, Division of Maternal and Child Health, State Department of Health, Des Moines, Iowa
Tulane University of Louisiana,	Two weeks pediatrics	Not available	10	Planned primarily for	$75 tuition, paid by Louisiana State Board of Health for Louisiana physicians	$26 per week paid by Louisiana State Board of Health for Louisiana physicians	Director, Division of Maternal and Child Health, State Board of Health, New Orleans, La.
Louisiana State University, New Orleans	Two weeks obstetrics	Not available	8	Louisiana physicians; others may be accepted			
Tufts College Medical School, Boston	One week or one month; separate courses in pediatrics and obstetrics	Not available	Not available	Graduates of accredited medical schools in the United States	Tuition and registration fees paid by Bingham Foundation for Maine physicians	A stipend is paid by Maine State Department of Health	If resident of Maine, State Department of Health and Welfare, Augusta, Maine
Harvard School of Public Health, Boston	Four weeks, two days each week, pediatrics Four weeks, one day each week, obstetrics	Not available	4	Limited to physicians conducting child health conferences and antepartum clinics in Massachusetts	None	Not available	Director, Division of Child Hygiene, State Department of Public Health, Boston, Mass.
University of Minnesota, Minneapolis	One course of six days	Oct. 11, 1940	30 to 50 for each course	Physicians practicing outside Minnesota	$3 registration fee applies on $25 tuition for six day course and on $15 tuition for the three day course	$15 to $18 per week; room, board and travel paid by state health departments of Minnesota and North Dakota for physicians they select $14 per week	If residents of Minnesota or North Dakota, respective state health departments; otherwise, to director of postgraduate medical education, University of Minnesota
	Two courses of three days each in the spring of 1941			Physicians practicing in Minnesota			
University of Nebraska, Omaha	Two weeks obstetrics and pediatrics combined	Jan. 6, Jan. 20, Feb. 3, Feb. 17, March 3, March 17, March 31, May 19, 1941	4	Graduates of accredited medical schools	$10 registration fee (refunded on completion of course)		Director, Division of Maternal and Child Health, State Department of Health, Lincoln, Neb.
Columbia University, New York Post-Graduate Medical School, New York	One month (three days each week)	November, December 1940, February, March, May, and June 1941	5	Graduates of accredited medical schools	$40 per month tuition	$10 to $15 per week	If residents of New Jersey, Consultant, Bureau of Child Hygiene, State Department of Health, Trenton, N. J.
			New Jersey State Department of Health pays $60 for tuition and expenses of each of the five men it selects for each course				
Columbia University, given at Margaret Hague Maternity Hospital, Jersey City, N. J.	Three months obstetrics	First day of each calendar month	2 each month	Graduates of accredited medical schools	$25 registration fee; applicable on tuition of $350	Full maintenance in hospital included in tuition	If residents of New York, Director of Division of Maternity, Infancy and Child Hygiene, State Department of Health, Albany N. Y.
			Physicians selected by New York State Department of Health have their tuition and expenses paid				
Duke University, Durham, N. C.	One week pediatrics and obstetrics combined	Not available	5 or 6	General practitioners in North Carolina in practice at least three years	$15 registration fee (returned on completion of course)	$12 to $13 per week paid by North Carolina State Board of Health	Director, Maternal and Child Health Services, State Board of Health; Raleigh, N. C.
University of Oklahoma, Oklahoma City	Two weeks obstetrics	Not available	4	Graduates of accredited medical schools	$25 registration fee ($10 refunded on completion of course)	$8 to $12 per week	Division of Maternal and Child Health, State Health Department, Oklahoma City, Okla.
Baylor University, Dallas, Texas	Four weeks obstetrics and pediatrics combined	Not available	20	Licensed physicians practicing in Texas, preference to age groups 35-55 in communities of less than 25,000 population	$50 tuition paid by state health department for physicians of their selection	$30 per week; maintenance paid by state health department	Director, Division of Maternal and Child Health, State Department of Health, Austin, Texas
University of Texas, Galveston	Four weeks obstetrics and pediatrics combined	Not available	20				
University of Michigan, Ann Arbor	Two weeks obstetrics	Every two weeks	4	Licensed physicians practicing in Michigan	None	$10 per week	Director, Bureau of Maternal and Child Health, Michigan Department of Health, Lansing, Mich.
Wayne University, given at Children's Hospital, Detroit	One month pediatrics	Every month	1	Licensed physicians practicing in Michigan	None	$50 per month	

PREVENTION AND TREATMENT OF DECUBITUS IN FRACTURES

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AND
GEORGE L. APFELBACH, M.D.
CHICAGO

Decubitus is a major problem of a fracture service having an annual turnover of 1,400 patients. In spite of prophylaxis, its incidence is such that it frequently overshadows the original surgical condition requiring hospitalization. Bedsores often prevent open reduction.

The foreign and American literature offer little truly investigative work regarding etiology or prophylaxis. We here report a newly developed technic in the prophylaxis and treatment of decubitus.

A series of 232 cases were followed over a period of three months. The average age was 51 years. There were seventeen patients with fractured hips, from 60 to 95 years old, ten who were diabetic, six with fractured pelves, and one who had a compression fracture with paraplegia. Of the original fifty-five patients six had

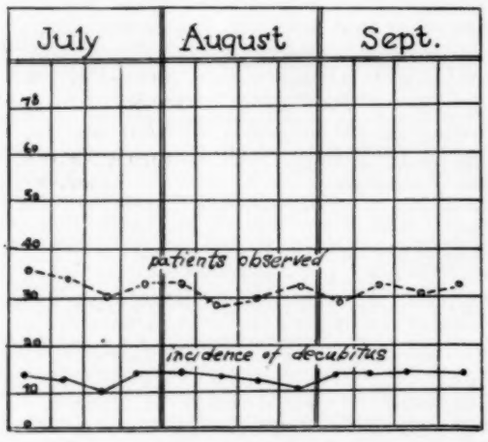

Fig. 1.—Group of patients treated by former accepted methods.

simple decubitus while twenty had deeply necrotic bedsores (chart 1).

Pressure is recognized as the chief cause of decubitus. It occurs usually over the sacrum, buttocks and heels, and less commonly over the malleoli, greater trochanters, scapulas and elbows. Pressure also occurs at the upper and lower edges of casts and at the ring of a Thomas splint. Trauma may be a contributing factor, caused by friction from bedclothes, rucks in sheets or dressings, gritty dusting powder or plaster, bedpans or other features of nursing care. Moisture, as in perspiration, urine or feces, macerates the skin and allows the entrance of infection. Senility, with its associated atrophy of the skin, is also a predisposing factor. Pressure areas due to lack of muscular development are more common in women. The skin of the Negro is less susceptible to decubitus. Hypovitaminosis is likewise a predisposing factor. Anorexia, poor dentures and associated dietary deficiency are common in the aged. The malnutrition and hypovitaminosis of alcoholic patients are well recognized. Hypoproteinemia with edematous skin, dehydration and chronic shock are frequently associated factors. Incontinence of urine or feces is commonly encountered, especially in the aged, and cord injuries lead to trophic disturbances with resulting infection. An increased incidence of bedsores in disease of the pancreas is recorded.[1]

Love [2] classifies bedsores as follows: stage 1 (threatened), with generalized redness of the skin which blanches readily and immediately reappears when the pressure is released; stage 2 (inevitable), with increased redness which assumes a purple hue, pressure causing no blanching. Early a vesiculation occurs over the purple-red area. These small vesicles and blebs soon break, close scrutiny being required to discover them. The resulting weeping surface is ideal for infection. This stage passes into stage 3 (ulceration), with sepsis and toxic absorption.

We observed that these pressure areas resemble the blebs and vesicles of a second degree burn. Latimer [3] also records this fact. In burns the skin is injured by thermal trauma with local edema and bleb formation. Decubitus pressure, from body weight or cast, causes dilatation of subcutaneous vessels and increased irritability of vasomotor endings in the skin; this results in the initial erythema with ready blanching on pressure. With continued pressure there is vasomotor paralysis and stasis. This accounts for the purple color and failure of the tissues to blanch on pressure, which in turn produces local edema and bleb formation.

Decubitus causes little pain, at least after the first day, probably owing to a pressure palsy of sensory fibers and to edema of the skin. With proper treatment only the first two stages should occur. Lesions in our cases never reached the stage of ulceration.

In the treatment of decubitus, prophylaxis is of the utmost importance. The breaking down of the skin must be avoided. With this in mind a "calamine varnish," [4] a mechanical and pharmaceutic aid, was developed. All pressure points are washed with tincture of green soap, alcohol and ether. The calamine varnish is applied with a brush and allowed to dry. Ordinary photographer's rubber cement is then spread over the same area and allowed to dry. These form a thick elastic coat over the points of pressure. The soothing astringent antiseptic coat, with its protecting layer of rubber, forms a pressure-proof, bacteria-proof, moisture-proof prophylaxis for decubitus. This is a routine procedure in the fracture ward. It may be repeated as often as necessary. It prevents the breakdown of tissue.

With urinary incontinence a Pezzar or Foley-Alcock [5] catheter affords constant drainage. Frequent or continuous [5] irrigation with 1 per cent phosphoric acid solution (to prevent alkaline cystitis) or alternately with 1:5,000 potassium permanganate solution should be given. We give ammonium mandelate or methenamine with sodium biphosphate for those intolerant to the former.

With male patients [6] a funnel made of cellophane, rubber, or other moisture-proof material is fitted over the penis and connected by tubing with a drainage bot-

Editorial assistance was rendered by Dr. J. Bailey Carter.
From the Fracture Service of the Cook County Hospital. Dr. Fox is resident physician in the Fracture Service and Dr. Apfelbach is assistant professor of surgery, Northwestern University Medical School.

1. Meyer, K. A., and Amtman, Leo: Urinary Diastase Test in Peptic Ulcer Penetrating into Pancreas, Am. J. Surg. **33**: 307 (Aug.) 1936.

2. Love, R. J. M.: Bedsores and Their Treatment, Practitioner **138**: 277 (March) 1937.

3. Latimer, E. O.: Treatment of Decubitus with Tannic Acid, J. A. M. A. **102**: 751 (March 10) 1934.

4. Tragacanth 2 per cent, benzoic acid 1 per cent in Ringer's solution to make 100 per cent. Add to this prepared calamine N. F. 7.5 per cent and bentonite 2.5 per cent. The calamine and tragacanth are well known emollients. The bentonite is a mildly antiseptic astrigent aluminum silicate clay and the benzoic acid a preservative.

5. With a two way catheter, irrigation can be continuous by the gravity method with a screw clamp control.

6. Suggested by Dr. Frank Kelly, resident, Fracture Service, Cook County Hospital.

tle, preventing the severe urethritis of males so frequent with indwelling catheters. For anorexia and malnutrition, 5 units of insulin is administered subcutaneously one-half hour before meals. Fluids, usually from 3,000 to 5,000 cc. daily by mouth, are given in a routine manner or physiologic solution of sodium chloride or saline-dextrose solution is administered parenterally. The puffy red dry fissured tongue of dehydration is watched for. The benefits of a high vitamin diet, brewers' yeast, orange juice and cod liver oil become readily apparent by comparison with the control group (chart 2).

Careful observation of the patient's skin is essential. Should vesicles or macerations appear they are immediately debrided and sprayed with a 10 per cent solution of tannic acid and 1 per cent salicylic acid.[7] When dry [8] a 10 per cent solution of silver nitrate is painted over the area. This forms a black supple thin tough crust which gives a "new skin" surface and requires no further treatment.[9] With infection and necrosis, fresh diluted solution of sodium hypochlorite is used freely. We do not cauterize exuberant granulations. This only adds a necrotic crust to a clean surface. A razor trims

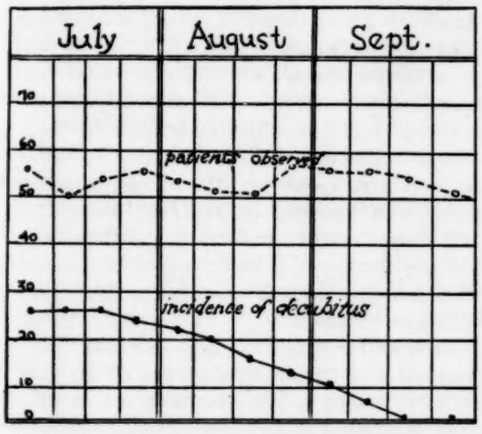

Fig. 2.—Group of patients treated with the calamine varnish and liquid rubber or tannic acid method.

the overgrowth of tissue to the level of the skin surface. Epithelium can then bridge the gap.

Since recovery in the twenty original cases, there have been no deep ulcerations. When clean they are treated as described. Skin grafts may be necessary. There was only one instance in our series. Latimer [3] describes the use of tannic acid in the treatment of necrotic decubitus and this method has been used by Love,[2] Spiesman,[10] Cope [11] and many others. Nayrac and Morel [12] described the use of 5 per cent silver nitrate to stiffen the skin in early lesions. Proper application of prophylaxis, as outlined, should in most instances prevent decubitus with fractures and chronic illness. With the simple treatment here outlined the existing bedsore readily heals. The prognosis of decubitus is improved. Patients requiring surgical therapy need not forego its benefits because of bedsores.

645 Fullerton Parkway.

7. This stimulates epithelization.
8. Drying is hastened by a hair drier or heat lamp.
9. Dressings roll, wrinkle and irritate. Tetanus prophylaxis should be routine.
10. Spiesman, M. G.: Bedsores (Decubitus), Am. J. Surg. **36**: 17 (April) 1937.
11. Cope, V. Z.: Prevention and Treatment of Bedsores, Brit. M. J. **1**: 737 (April 8) 1939.
12. Nayrac, P., and Morel, J.: Recherches sur l'escarre de décubitus, Rev. de méd., Paris **43**: 1265, 1926.

FAILURE OF GELATIN OR AMINOACETIC ACID TO INCREASE THE WORK ABILITY

OF INDIVIDUAL NORMAL HUMAN MUSCLES

GEORGE L. MAISON, M.D.
DETROIT

The observation that gelatin was an effective agent in postponing human fatigue was made by Ray and his co-workers [1] in a now widely publicized paper which appeared in February 1939. To date no confirmation of this action of gelatin has appeared. Ray theorized that gelatin postponed fatigue by an action on the muscles themselves. He reasoned that creatine was a substance important in muscle chemistry, one of whose precursors in the body may be aminoacetic acid (glycocoll, glycine). Aminoacetic acid makes up 25 per cent by weight of gelatin. An added supply of aminoacetic acid was thought to increase the store of creatine in the muscles. If this is the mechanism by which gelatin acts, the effect should show up in increased work ability of a single human muscle during a period of gelatin or aminoacetic acid ingestion. Further, if gelatin has any action on fatigue its ingestion should increase the ability of individual muscles to do voluntary work, since the work of a single muscle requires cooperation of the circulatory, muscular and nervous systems just as does action of the body as a whole.

Experiments were therefore undertaken to test the work ability of a single human muscle before, during and after the ingestion of gelatin or aminoacetic acid.

METHOD

Male subjects fatigued the extensor digitorum communis muscle daily by doing work at a uniform rate. (The load was constant and the length and rate of contraction were constant.) Fatigue was defined as that condition in which the subject could not maintain the rate of work. In order to differentiate the ability of the neuromuscular system alone from the ability of the combined neuromuscular and circulatory systems, the right arm of each subject did its daily work without blood supply whereas the left arm retained its circulation during work.

A weight ergograph was designed especially for the extensor of the fingers.[2] The ergograph recorded on automatic counters the total distance through which the weight was moved and the total number of individual strokes made. A buzzer was included in the machine and contacts were so arranged that when the load was lifted to a set height the buzzer sounded. The subject was trained to lift the weights until the buzzer sounded and then to relax. Thus the strokes made were of nearly uniform length, about 6 cm. This is a comfortable stroke for the extensor if the metacarpophalangeal joint is used as a fulcrum, and the load is applied over the distal halves of the second phalanges of the fore, middle and ring fingers.

The definition of fatigue mentioned was made possible by the buzzer. The subject makes one contraction per second. When he can no longer ring the buzzer in the allotted time he ceases to work.

The blood supply to the muscle of the right arm was interrupted during its work by means of a sphygmomanometer cuff

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1. Ray, G. B.; Johnson, J. R., and Taylor, M. M.: Effect of Gelatin on Muscular Fatigue, Proc. Soc. Exper. Biol. & Med. **40**: 157 (Feb.) 1939.
2. Construction details of the ergograph will be described in a subsequent paper.

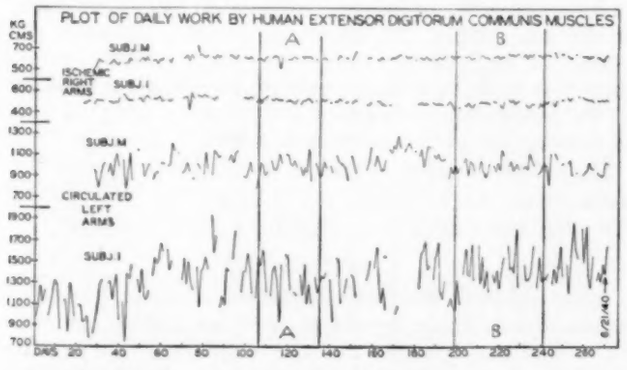
instantaneously inflated to a pressure of 240 mm. of mercury from a pressure reservoir of about 5 gallon capacity. Muscles worked under this condition are hereafter referred to as "ischemic."

RESULTS

The experiments were divided into two groups: The first group shows the effect of gelatin on muscles in the process of rapid training. This is analogous to Ray's procedure, since his subjects had trained for only thirty days before gelatin was taken.

The six subjects included four medical students between 23 and 25 years of age, one mechanician aged 45 and one instructor aged 28 years. All the subjects were in excellent health with normal blood pressures. All work was done with an 800 Gm. load, a 6 cm. stroke and a rate of one contraction per second.

In March 1939, when the experiments began, the circulated (left) muscles were capable of only 300 to 900 Kg. cm. of work. After five weeks of training this ability was doubled or trebled and was still increasing rapidly. Each subject then took 60 Gm. of granular unflavored gelatin [3] in fruit juice, soda water or plain water (divided into two doses) each day. This was the quantity of gelatin suggested and used by Ray.[1]



Each point plotted is the total work in kilogram centimeters done by the extensor digitorum communis muscle on a given day. *A*, aminoacetic acid 15 Gm. daily; *B*, gelatin 60 Gm. daily. The points are connected by lines when the work days follow one another immediately. When work was not done on a particular day, no point is plotted and the line is interrupted. When a subject had to be absent more than two days, a portable ergograph was used each day to maintain training but no point was plotted on the graph. Both subjects had trained their muscles by daily work for more than six months before this graph begins. A fixed rate of work was obtained by using a constant load (1,400 Gm. on circulated muscles, 1,100 Gm. on ischemic muscles), a constant stroke of 6 cm., a constant rate of one stroke per second. Thus the essential variable is the time the subject can continue to work.

Two of the medical students were forced to discontinue gelatin within ten days, owing to apparent gastrointestinal intolerance. The complaint was nausea and a sensation of distention. The remaining four subjects continued the regimen for from twenty-one to thirty-one days. All six subjects continued working daily.

During the gelatin period the ability of all six circulated muscles continued to increase markedly. By the end of May, four weeks after all gelatin was stopped, each of the subjects was able to carry the 800 Gm. load for an indefinite period without fatigue (i. e. steady state). The training during the ingestion of gelatin was indistinguishable from that which occurred before the gelatin or after the gelatin was discontinued.

The ischemic (right) muscle in each case reached maximum ability after three or four weeks of daily work. It showed no further change in its ability (from 200 to 600 Kg. cm.) either as a result of daily work or as a result of the ingestion of gelatin.

3. Swift's "Velvetex" gelatin, purchased from the local office of Swift & Co.

The conclusions derived from this group of experiments were that:

1. Gelatin had no influence on the ability of human muscle working without blood supply.

2. No improvement in training of the circulated muscles was effected by gelatin. This did not prove that gelatin had no effect, as the muscles might have been training so rapidly that the effect of the gelatin would not have been visible.

3. The omission of gelatin from the daily regimen did not decrease the ability of those muscles which had been receiving it.

The second group of experiments was to determine what effect gelatin would have on the thoroughly trained muscle. Only two subjects (mechanician and instructor) were available continuously for the full year required for thorough training. These continued to work daily, using a load of 1,100 Gm. on both the circulated and the ischemic muscles. By the end of September and October respectively the ability of the circulated muscle had mounted from 800 to 1,100 Kg. cm. in June to 2,000 to 4,000 Kg. cm. or very close to steady state ability. The load was therefore increased again, this time on the circulated muscle alone, to 1,400 Gm. The ischemic muscles continued to work with a load of 1,100 Gm. The accompanying graph shows the entire subsequent course.

As can be noted, the ability of both the circulated and the ischemic muscles remained virtually constant for the first three months. Aminoacetic acid [4] 15 Gm. a day was then ingested by each subject for thirty days. This amount was used because it approximates the aminoacetic acid present in 60 Gm. of gelatin. As the graph shows, there was no improvement in work ability during or after the ingestion of aminoacetic acid. Also there was no decline in power after the aminoacetic acid was stopped.

After another two months had elapsed the subjects were given gelatin [5] again at the rate of 60 Gm. a day. After forty-two days on this regimen each subject had taken about 5 pounds of gelatin. The graph shows that neither the circulated nor the ischemic muscles showed any improvement during the ingestion or any decrease of ability after the gelatin was discontinued.

COMMENT

The obvious criticism of these experiments is that experimental work on only two subjects is not often acceptable. It must be remembered, however, that the data from one well trained muscle are more apt to be valid than the data from a dozen incompletely trained ones. Unfortunately, it is difficult to find subjects who are willing to train their muscles by daily work over a period of many months. The total data here presented show that in six trials the ability of the ischemic human muscle was uninfluenced by the ingestion of gelatin. This is probably a measure of the inherent ability of the neuromuscular unit itself irrespective of changes in the circulation. The data show that in six trials no decrease in ability attended the withdrawal of gelatin. Ray reported that the withdrawal was accompanied by a decrease in the summated ability of the many muscles used in operating a bicycle ergometer. The data show conclusively in two thoroughly trained subjects that the ability of the single circulated muscle was not increased by the ingestion of gelatin. This is

4. Glycocoll-Squibb was the aminoacetic acid used in this experiment.

5. Knox's unflavored "sparkling" gelatin was purchased for this purpose from a local distributor.

probably a measure of the ability of the combined neuromuscular and cardiovascular systems.

Most experiments dealing with voluntary fatigue of human muscles are open to the criticism that psychic changes can affect them. Is it probable that the subjects used were biased and consciously or unconsciously decreased their effort during the ingestion of gelatin? When a subject works as hard as he can, though only with a single muscle, certain changes occur. The blood pressure rises markedly, the face flushes and the jaw sets, and new associated movements occur and spread with the rise of the effort required to keep going. Such signs were always seen in these experiments. On a number of occasions the blood pressure was taken on the free arm during the work bout. An increase of 60 to 80 mm. of mercury systolic pressure was always found toward the end of the work. I have no doubt that each of the subjects made the maximum effort of which he was capable on every work occasion.

What influence do the present data have on the hypothesis that gelatin will postpone the occurrence of fatigue in work involving the whole body of normal persons? It is conceivable, though unlikely, that the ability of a single muscle might be differently affected by a given procedure than the ability of the body as a whole. However, the only objective data supporting the increased work ability in normal persons due to gelatin are those of Ray and his co-workers.[1] These authors trained their subjects for only two to four weeks before starting the gelatin. They found the gelatin effective only in male subjects and reported a decrease in work ability within ten days after the ingestion of gelatin stopped. Hellebrandt, Rork and Brogdon [6] tested the influence of gelatin on the ability of female subjects by essentially the same method as that used by Ray. The Wisconsin investigators found no increase in the ability of their women subjects but they pointed out that their subjects could easily maintain a work output two or three times the maximum attained by Ray's male subjects; that the curves presented by Ray could be explained by the process of training without any action of gelatin. Ray's subjects were obviously incompletely trained. They were working daily to complete bodily fatigue. It is unlikely that such fatigue is completely overcome in twenty-four hours. Thus two simultaneous processes might be occurring in these subjects, training tending to increase the work ability and accumulating fatigue (overexercising) tending to decrease the work ability. At first the former process might predominate and ability increase. Later, a plateau might occur and later still staleness would predominate and the work ability decrease. If the gelatin was administered early and discontinued as the second process gains dominance, a curve such as Ray's would result. While all this is theoretical it makes even more imperative the statement of the Council on Foods: [7] "It should be obvious that observations such as those reported [by Ray, Taylor and Johnson] on six men cannot be applied to all men until experimental confirmation is available from other laboratories."

The failure of aminoacetic acid to influence the work ability of the two thoroughly trained subjects suggests that the mechanism which makes aminoacetic acid effective in myasthenia gravis does not operate in normal subjects. Since the average American dietary of protein is usually quite adequate, there is no reason to suppose that a supplement of the amino acid aminoacetic acid would be required for efficient function in normal persons.

SUMMARY

In two subjects trained for one year, neither aminoacetic acid 15 Gm. a day for thirty days nor Gelatin (Knox) 60 Gm. a day for forty days increased the work ability of the extensor digitorum communis muscles working with or without blood supply.

In four subjects in the midst of their training period the ingestion of gelatin for from twenty to thirty days produced no obvious difference between the rate of training of those taking gelatin and the rate of training of controls without gelatin.

1512 St. Antoine Street.

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Clinical Notes, Suggestions and New Instruments

AN UNUSUAL CASE OF ROCKY MOUNTAIN SPOTTED FEVER IN SOUTHEASTERN PENNSYLVANIA

MILTON H. COHEN, M.D., YORK, PA.

The fact that the disease entity with the geographic name of Rocky Mountain spotted fever is appearing with greater frequency in the East is not as well known as the many recent reports would indicate. It was only in 1930 that research workers of the Public Health Service discovered that this disease was present in the states of the Atlantic seaboard. Since then many reports have appeared in the literature describing the epidemiology and clinical manifestations as they appear in the East. Rumreich,[1] Richards,[2] Crutcher,[3] Litterer,[4] Caton,[5] Montz,[6] Parker,[7] Baker,[8] Pincoffs and Shaw,[9] Carey and Duncan,[10] Hampton and Eubank,[11] Flippen [12] and many other investigators have conclusively shown that the presence of Rocky Mountain spotted fever in the East is on the increase and that the type as seen in the Rocky Mountain region is identical with that seen along the Eastern seaboard. However, when an isolated case does appear it always represents a considerable diagnostic problem, particularly if it is the first to be seen in the community in which it arises. I therefore felt that the report of the following case would be of interest, first as showing the diagnostic difficulties in a community in southeastern Pennsylvania which hitherto had been free from Rocky Mountain spotted fever, and second because of the occurrence of two features that Dyer [13] considered to be most unusual—the month (December) in which the infection was contracted and a relapse that occurred one month after the symptoms of the original infection had completely subsided.

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13. Dyer, R. E., Chief, Division of Infectious Diseases, U. S. Public Health Service: Personal communication to the author.

REPORT OF CASE

F. S., a white man aged 45, admitted to the York Hospital Dec. 9, 1938, complained of severe headache, fever and nausea. Four days before admission the patient awakened with an excruciating frontal headache, aching pains in the back and legs and marked nausea. His family physician was called and found a temperature of 102 F., a pulse rate of 82 and a respiratory rate of 20. The physical examination revealed no gross abnormality. The headache increased in intensity, requiring the use of morphine; the nausea developed into continuous vomiting and he was sent to the hospital with the tentative diagnosis of typhoid or encephalitis.

The past medical history and the family history were of no particular relevance.

The patient was robust. On physical examination he was dull and drowsy and answered questions irrationally. He was very toxic—coated tongue, foul breath, hot skin. The temperature was 104 F., the pulse rate 102, the respiratory rate 26 and the blood pressure 130 systolic, 76 diastolic. The heart and lungs were normal; no masses were palpable in the abdomen and there was no adenopathy. The neurologic survey was negative.

December 9 the hemoglobin content was 13 Gm., red blood cells numbered 4,000,000, white blood cells 5,800 with a differential count: segmented neutrophils 34 per cent, nonsegmented neutrophils 29 per cent, small lymphocytes 25 per cent, large lymphocytes 1 per cent and monocytes 11 per cent. Analysis of the urine was negative for albumin and sugar. There was no microscopic abnormality. The Kahn reaction was negative.

December 10 the Widal test and agglutination tests for undulant fever and tularemia agglutination were negative. The spinal fluid was clear and colorless, with a pressure of 14 mm. No cells were present. Tests for globulin were negative. Sugar was 55 mg. per hundred cubic centimeters. The result of the mastic test was 00000. The Kahn reaction was negative. Blood cultures yielded no growth (ten days' incubation). Examination of the stool was negative for the typhoid-paratyphoid-dysentery and the gram-positive cocci group. Examination of the urine was negative for the typhoid-paratyphoid-dysentery group.

Four days after his admission the diagnosis was still most uncertain. The continuously high temperature (average of 104 F.) and the comparatively slow pulse (average of 102), the prostration, the delirium and the depression suggested typhoid; but all agglutination tests were negative and no organisms were found in the stool or urine. The severe headache, the nausea and vomiting, the moderate rigidity of the muscles of the neck suggested meningitis or encephalitis, but the normal spinal fluid denied that diagnosis. A few days after his arrival in the hospital a hacking cough developed and scattered rales were heard throughout the chest. Two sputum examinations revealed the presence of pneumococcus type VI and many gram-negative bacilli of Bacillus influenzae morphology. X-ray examination of the chest showed no areas of consolidation and physical signs of pneumonia were absent. However, at that time the diagnosis of a virulent type of influenza could not be eliminated. Also tularemia, undulant fever and the typhoid group were still under consideration, in spite of repeated negative agglutination studies.

On December 14, five days after his admission and about nine days after the onset, the first clue to the actual diagnosis was noted. A macular, red, pinpoint eruption was observed on the abdomen. By the next day this rash had spread to his legs, arms, back, palms of his hands and soles of his feet. A few lesions were seen on the roof of his mouth. The color at first disappeared on pressure but later did not. Successive crops of macules appeared and the earlier lesions became darker. Small hemorrhagic areas developed particularly around his ankles. With the appearance of the eruption his symptoms became intensified. Fever rose to 105 F. (axillary), stupor was more pronounced, intense photophobia and conjunctivitis appeared and the spleen became tender and palpable. Retention of urine occurred and repeated catheterizations were necessary.

With the appearance of the eruption the diagnosis was confined to typhus fever or Rocky Mountain spotted fever. A specimen of blood was sent to the Pennsylvania department of health laboratories and the agglutination against Bacillus proteus X_{19} was positive in a titer of 1 : 2,560. Another specimen confirmed this finding. The positive Weil-Felix reaction confirmed the diagnosis of a rickettsial infection but did not differentiate between typhus fever and Rocky Mountain spotted fever. The clinical picture also was of no help in making this differentiation. According to Caton,[5] the temperature runs higher and the disease lasts longer in Rocky Mountain spotted fever. In typhus fever the rash appears first on the chest and abdomen, in Rocky Mountain spotted fever first on the ankles and wrists. But these points are of little significance in an isolated sporadic case and of but little aid in making the diagnosis. It was not until several months after the patient had recovered, when I sent a specimen of his serum to Dr. R. E. Dyer of the United States Public Health Service for protection tests, that the final diagnosis was made. Dr. Dyer reported that the completed protection tests in guinea pigs indicated protection against Rocky Mountain spotted fever.

After the eruption had run its course the clinical picture took a turn for the better. His headache lessened, his temperature declined by lysis and his consciousness improved. Throughout the course of the illness the treatment was simply symptomatic, the most important factor being good nursing care. After his temperature was normal for one week he was discharged on December 29, after a stay of twenty-three days in the hospital. On Jan. 25, 1939, following a period of three weeks during which his temperature was normal and he felt perfectly well, his headache returned and a high fever developed. No rash appeared. Headache, fever, chills and malaise continued for two weeks and then left him with no sequelae. He has been well ever since and has continued his usual occupation in very good physical condition.

COMMENTS

This case was most intriguing in many respects. The differential diagnosis of an unknown fever is always an interesting procedure. After the diagnosis had been made, the first of its kind in York County, the question of origin deserves consideration. Repeated questioning gave no history of a known tick bite. About a week before the onset he had been hunting in the woods close to the Maryland state line, but the tick season in that region persists only from May to October and the eight cases reported by Pincoffs and Shaw[9] occurred only during that interval. Hampton and Eubank[11] point out that in the Atlantic states the incidence begins in May, reaches the peak in July, continues though declines definitely in August and drops abruptly in September and October. The occurrence of a case in December is decidedly unusual. The patient's occupation as a railway station agent required him to handle several shipments of undressed furs about a week before the onset of the fever and headache. Sedlacek[14] reported the case of a meat packer who during the course of his work had to pass hides which were hung from the ceiling of a room. On his way home one evening he felt a bite on his neck and removed a tick. He subsequently contracted Rocky Mountain spotted fever. My patient has no recollection of a tick bite or so definite a source, but the possibility of the furs he handled containing the vector may be one explanation for the source of his infection. The relapse occurring about three weeks after the subsidence of all symptoms is rather unusual. For two weeks it seemed that the whole clinical picture had returned with the exception of the eruption and urinary retention. In a rather thorough survey of the literature I could find no other account of such a relapse.

CONCLUSIONS

A case of Rocky Mountain spotted fever which occurred in eastern Pennsylvania is unusual because of its onset in December and because of the occurrence of a relapse three weeks after the subsidence of all symptoms.

The name Rocky Mountain spotted fever is a suggestive misnomer, for that disease is now endemic along the whole Eastern seaboard and is by no means limited to the Rocky Mountain region. In the diagnosis of the problem of the unknown fever this disease should be kept in mind, and the value of the Weil-Felix and protection tests should be emphasized.

206 East Market Street.

14. Sedlacek, L. B.: Rocky Mountain Spotted Fever, J. Iowa M. Soc. **27**: 66 (Feb.) 1937.

Special Article

CONTRIBUTIONS OF THE WORLD WAR TO THE ADVANCEMENT OF MEDICINE

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In Flanders' fields the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly
Scarce heard amid the guns below.

So wrote Major John McCrae, a medical officer of the Canadian army, at his dressing station during a lull in the hottest phase of the second battle of Ypres in 1915.[1]

Little did he dream, as he created this immortal poem, that it would be cherished as the World War's greatest contribution to poetry. Nor did the harassed people of that day realize that the war would contribute substantially to the advancement of medicine. They were more concerned with what medicine could contribute to the war.

More than sixty million men were mobilized in the sixteen belligerent nations during the World War. About twenty million lives were sacrificed as a direct or indirect result of the war. About ten million soldiers and sailors were killed in action or died from wounds or disease. Approximately twenty million were wounded and nearly seven million were listed as missing or prisoners. Excluding the heavy casualties suffered by civilian populations, more than thirty-four million men were killed in action, died of wounds or disease, were wounded or were missing in action.[2]

With these appalling statistics in mind, it seems incongruous that the holocaust of 1914-1918 could offer any contributions to the advancement of medicine. Nevertheless, out of the throes of this ghastly war came certain vital contributions to human welfare.

Acknowledging the stupendous tragedy of the war, I will attempt to portray some of the benefits that have arisen from the mud and blood of those hectic years. Only such contributions as have furthered the advancement of medicine will be discussed.

The literature from which this essay is compressed is rich with facts concerning the effects of the great struggle on medicine. The war experiences of distinguished medical leaders have brought forth opinions and conclusions that may now be visualized in the mellow light of elapsed years.

War, whatever its faults may be, invariably serves as a stimulus.[3] When the institutions, the freedom, the wealth, the health and the very lives of a people are jeopardized by destructive forces from without, the primal instinct of self preservation becomes a spur to endeavor and accomplishment. Medicine, unless overwhelmed by disaster, is bound to advance more rapidly under the stimulus of war.[4]

1. Roddis, L. H.: The Poet of Flanders' Fields, Ann. Int. Med. **6**: 1657 (June) 1933.
2. Garrison, F. H.: Notes on the History of Military Medicine, Mil. Surgeon **51**: 201 (Aug.) 1922.
3. Bainbridge, W. S.: Some Lessons of the World War in Medicine and Surgery from the German Viewpoint, Mil. Surgeon **49**: 361 (Oct.) 1921.
4. Mayo, C. H.: War's Influence on Medicine, J. A. M. A. **68**: 1673 (June 9) 1917.

During the World War, great nations found themselves in danger of annihilation. Despite terrific losses, the will to survive and triumph promoted progress and accomplishment in all fields. This stimulus produced unprecedented efforts on behalf of the wounded soldier, caused an acceleration of medical achievement and resulted in contributions which tended to offset or compensate for the great loss of life and the economic cost of the war. The destruction wrought was, therefore, an impetus to progress—a stimulus to constructive activities.[5]

The potent but intangible stimulus of this colossal war was an important factor in producing definite contributions to the progress of medicine. These contributions will be considered under the following general headings.

1. Medical organization, education and literature.
2. Surgery and its related specialties.
3. Internal medicine and its related specialties.
4. Physical therapy, occupational therapy and roentgenology.
5. Medical advances in combating the ill effects of chemical agents.
6. Preventive medicine, public health and sanitation.
7. Medical supplies and equipment.

MEDICAL ORGANIZATION, EDUCATION AND LITERATURE

During the World War the best medical men of the time were drawn into the maelstrom of kaleidoscopic events. In each of the belligerent countries these men became organized, with a common purpose.

The internist Dr. Harlow Brooks[6] spoke of the medical men of the United States as follows: "They were the first of the American Army to enter France and Belgium. The Medical Department was the first to be under fire, the first to suffer casualties and the first to receive death at the hands of the enemy."

In all the warring nations young doctors fresh from school, mature general practitioners and specialists in all branches of medical science were regimented to care for the sick and wounded, prevent disease, supervise sanitation and in various other ways assist in the conservation of the fighting strength of more than sixty million mobilized men. Cohesion, cooperation and team work developed on a greater scale than ever before in the history of medicine.

The best of the medical world were among the first to offer their services. Many of them were dumped unceremoniously into the seething cauldron of unclassified medical officer personnel. Like eggs, they were scrambled together. Many sizzled with righteous indignation at what seemed to be military inefficiency and lack of coordination. These splendid professional men were soon trained to understand and tolerate the red tape and apparent inconsistencies of military life. Their progress toward organized efficiency was essentially along the lines of military team cooperation. Group practice, as is known today, was thus encouraged as the result of the exigencies of war. This development of group medical practice, without displacement of the general practitioner, was an important advance in medicine and an outgrowth of the World War.[7]

Experiences in this war demonstrated the desirability of specialization in various branches of medical science

5. Fox, L. A.: Basic Biologic Aspects of War, Mil. Surgeon **78**: 22-31 (Jan.) 1936.
6. Brooks, Harlow: The Lessons of the World War for the Internist, Illinois M. J. **40**: 37 (July), 81 (Aug.), 181 (Sept.) 1921.
7. Butler, E. F.: Influences of the World War on the Development of Civil Practice, Mil. Surgeon **51**: 494 (Nov.) 1922.

and showed conclusively that the superman of medicine who was presumably well qualified in all fields of medicine was no more than a myth—an unattainable ideal. As a result of lessons taught by the war, civilian medical practice became enriched by the sturdy growth of specialization. Likewise medicomilitary policy swung away from prewar concepts and leaned toward the idea of special training. Keen minds realized that only deterioration could result from any policy which ignored specialization. The day had long since passed when even the most brillant medical officer could assimilate the requisite knowledge to perform satisfactorily all the duties which might be required of him. Medical knowledge had become too voluminous.[8] There arose a school of thought in the Medical Department of the Army that medical officers should not all be obliged to devote their careers to learning everything and excelling in nothing. It was recognized that only by specialization could the highest professional ability be attained.

In the United States Army, after the war, Surgeon General Ireland and his advisers were quick to see this and group practice with specialization was encouraged. This policy was in keeping with the postwar trend in civil practice and it increased the professional prestige and efficiency of the Army Medical Corps tremendously.[9]

In many countries the records of physical examinations of World War conscripts comprise a vast reservoir of statistical data which are of value in studying the incidence of various physical defections in different age groups.[10] There has arisen, as a contribution of the war, an added interest in periodic physical examinations, an added interest in raising the standards of medical education and a popular demand for increased facilities for postgraduate medical training.[11]

World War contacts and problems promoted a better understanding and cooperation between Regular Army, Navy, National Guard and Reserve medical officers in America and bridged, in the space of a few years, the gap of intolerance, jealousy and distrust which had hitherto hindered medicomilitary progress. This friendly cohesion between various medical groups occurred also in other nations and may be considered an important stride in the march of military medicine, a boon to the federal services and a boost to medical science. In the field of military medicine the World War also brought to all nations a realization of the need for medicomilitary preparedness,[12] including personnel procurement and classification, training, medical supply and medical mobilization plans.[13]

It is true that during the war many medical men were diverted from important peacetime research and practice. But others were pulled out of ruts and dragged from the mire of professional stagnation. Through wartime contacts, responsibilities and experiences they envisaged new and greater fields of endeavor. Many acquired a broadness of perspective that could never have developed in the course of a peacetime career.[14]

A wealth of medical literature based on experiences of medical men during the World War has accumulated, thanks to those who were not too inarticulate or too reticent to publish facts, impressions and helpful hints gleaned from their service in uniform. This was facilitated by the organization of professional groups such as the Medical Research Committee of the American Red Cross in France.[15] This committee was composed of members of the Red Cross Commission and of the United States Army Medical Corps. It was appointed for the purpose of stimulating research and aiding in the distribution of the medical information acquired by America's allies during the first years of the war.

Chemists, physiologists, bacteriologists, biologists and pathologists were brought into intimate association with practical clinical problems. The clinical and pathologic conference as an educational medium for interchange of professional knowledge became more widespread as a result of the popularity of such conferences during and immediately after the war.

In addition to showing the need for specialization, the war broadened tremendously the point of view of the specialist. This was accomplished by his close association with other branches of medical work under the stress and strain of fulfilling a great common mission.

In addition to numerous fragmentary writings of educational value, the World War has produced in documentary form a comprehensive record of the United States Army Medical Department activities during that period. These fifteen volumes "The Medical Department of the United States Army in the World War," compiled from records in the Surgeon General's Office[16] under the direction of Major General Merritte W. Ireland, is the most complete chronicle of war medical activities in the history of the world. Other countries, to a lesser degree, have preserved documentary details of their medical activities during this great conflict.

A large section of the Army Medical Museum in Washington, D. C., is filled with specimens acquired during and as a result of the war. These specimens of war pathology are of considerable educational value. Their preservation and display are of real worth to the medical world.

The organized development of public health nursing on a more comprehensive scale was hastened by the war. The value of the nursing profession was more widely recognized and popularized. Nursing education and activities expanded to an unprecedented degree.[17]

SURGERY AND ITS RELATED SPECIALTIES

Dr. George Crile[18] in 1920 made the following statement concerning the clinical material created by the World War and its effect on surgical advancement: "So vast was the field that in traumatic surgery the concentrated and accumulated experience of this brief period was greater than the experience along the same lines during the past one hundred years. It follows that during those months many new chapters were opened, some were closed and some discarded, while some were completed and their subject matter stands to be passed on to the benefit of civilian practice."

8. Dorland, W. A. N.: The Progress of Medical Science During the World War, Illinois M. J. **38**: 434 (Nov.) 1920.
9. Ireland, M. W.: The Achievement of the Army Medical Department in the World War, J. A. M. A. **76**: 763 (March 19) 1921.
10. Love, A. G., and Davenport, C. B.: Defects Found in Drafted Men, War Dept., 1920, U. S. Govt. Printing Office.
11. Drake, C. St. Clair: The Influence of the War on Preventive Medicine and Public Health, J. A. M. A. **73**: 803 (Sept. 13) 1919.
12. McDiarmid, N. L.: Work of Industrial Preparedness Section, Supply Division, Surgeon General's Office, War Department, Mil. Surgeon **57**: 495-516 (Nov.) 1925.
13. Fife, J. D.: Industrial Mobilization, Mil. Surgeon **57**:145-152 (Aug.) 1925.
14. Palmer, G. T.: War Balance Sheet, Am. J. Pub. Health, **16**: 819-821 (Aug.) 1926.
15. Taylor, Kenneth: Historical Review of the Medical Research Committee of the American Red Cross in France, War Medicine **2**: 1580-1597 (published in Paris, France, by the American Red Cross Society in France, for the Medical Officers of the American Expeditionary Forces).
16. The Medical Department of the United States Army in the World War (Fifteen volumes, published by the War Department, U. S. Govt. Printing Office).
17. Kerr, J. W.: Some Influences of the World War on the Future of National Health, Mil. Surgeon **49**: 125 (Aug.) 1921.
18. Crile, G. W.: Surgical Researches During the World War, South. M. J. **13**: 267 (April) 1920.

Improved treatment of wounds stands out as one of several important advances in surgery contributed by the World War.[19] Excision of wounds with primary closure was developed. Débridement, followed by disinfectant irrigation with the Carrel-Dakin technic and delayed closure, was originated and proved highly successful. The war taught the importance of immobilization of wounds of the soft tissues, even when no fractures coexisted. It taught that primary suture is the ideal to be carried out when possible; that delayed primary suture or early secondary resuture should be used when primary suture is impracticable.[20]

One of the valuable lessons of war surgery was that bacteria of almost any variety can be dormant in healed or healing wounds and may, with slight provocation, cause recurring infection.

Much progress was made through trial and error experimentation concerning the disinfectant qualities of dyes and chlorine preparations.[21] Of the surgical antiseptics developed by the war, Dakin's solution (diluted solution of sodium hypochlorite) is the most notable. Acriflavine, developed by the British, has also proved to be of considerable value, as has dichloramine-T.

Few will dispute the advances made in orthopedics during the war. Improvements in bone and joint surgery, especially in the treatment of infected joints, bone grafting and amputations, were notable.[22] Standardization of, and dissemination of, knowledge concerning the skeletal splints and proper management of fracture cases were accomplished. The names of Blake, Osgood, Allison, Keller, Kirk and others will be remembered in this connection.

World War experience with fractures [23] showed that any method which compressed the part and impeded circulation interfered with the defense against infection, which in turn meant delayed healing. This led to the elimination of the coaptation splint and the substitution of immobilization by fixation with traction. The Balkan frame found its place, and other appurtenances furthering the comfort and rehabilitation of the orthopedic patient were devised. The war brought forth improved prosthetic appliances such as artificial limbs, supporting jackets, belts and braces and showed the need for orthopedic shops at hospitals caring for orthopedic patients.

The radical advance in the treatment of septic arthritis, introduced by Wilms, a Belgian surgeon, during the war, demonstrated the value of free drainage and active motion of infected joints. This was a revolutionary procedure which prevented and will continue to prevent thousands of stiff joints.

The high incidence of "trench foot" increased our knowledge of the damaging effects of prolonged exposure of the extremities to dampness, cold, tight leggings and ill fitting footwear.

A World War observation of little significance at the time led in later years to the development of a unique method of attacking the discouraging problem of chronic osteomyelitis. Dr. William Baer, an orthopedic surgeon of Baltimore, was impressed during his service in France with the clinical paradox presented by maggot-infested wounds.[24] He was puzzled when several soldiers who had lain wounded on the battlefield for a number of days with extensive necrotic wounds were brought to his hospital in surprisingly good condition. He found the wounds infested with maggots, but he was amazed to note that the maggots were cleaning up the necrotic flesh and promoting healing of the damaged tissue.

So strongly was Dr. Baer impressed by this observation that he conducted experiments after the war and found that he could hasten healing in many cases of chronic osteomyelitis which had resisted orthodox methods of treatment. His discovery was presented to the world, and now the raising of maggots for therapeutic purposes is a matter of fact. The happy results obtained by this seemingly abhorrent form of treatment have encouraged its use. But its rise to popularity is naturally slow, owing to the asthetic considerations and the revulsion at deliberately infesting wounds with these repulsive scavengers of dead flesh.

The popular appeal for maggot therapy has not grown rapidly even though its proponents stress the cleanliness of the technic. The little larvae are reared under almost aseptic conditions, washed thoroughly and preserved in a weak solution of mercury bichloride, which does not seem to harm them. Their scavenger services are utilized, of course, only in conjunction with other surgical methods, including thorough débridement of all accessible necrosed or devitalized tissue.

Anesthesia received careful study and rose to a higher plane during the war.[25] The value of nitrous oxide became more widely recognized, and this gas was generally accepted as the anesthetic of choice. The usefulness of spinal block anesthesia was proved, and advances were made in the field of local anesthesia.

Collaboration between laboratory and surgical service was intensified and was a factor in the establishment of improved surgical methods.[26]

Vascular surgery was enriched. Traumatic aneurysms and other injuries to blood vessels are now handled with greater skill as a result of the war. Knowledge of nerve surgery and tendon transplants increased.[27]

Blood transfusion was simplified, its dangers determined and minimized, and its field of usefulness extended.[28] The prime lesson learned was that transfusion should be done early and not delayed until the condition of the patient became critical. A plan was evolved whereby blood could be grouped, withdrawn and kept sterile, so that at any time within two weeks it could be available for transfusion. When heavy battle casualties were anticipated, supplies of blood for transfusion could be prepared in advance and held in readiness.

Advances were made in the early recognition, control and treatment of wound tetanus. Substantial improvements in brain surgery were attained under the leadership of such skilled specialists as Harvey Cushing.

Modern thoracic surgery may be said to have had its birth during the war as a result of intensive efforts to save those who were victims of chest wounds and

19. Hartwell, J. A., and Butler, E. F.: The Application of the Teachings of War Surgery to Civil Hospital Conditions, Surg., Gynec. & Obst. **27:** 377 (Oct.) 1918.
20. Miller, J. A.: What the War Has Taught Us Surgically, New York M. J. **110:** 414 (Sept. 6) 1919.
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22. Gray, H. M. W.: Application of the Professional Lessons of the War to Civil Life, Brit. M. J. **1:** 109 (Jan. 22) 1921.
23. Smyth, John: Lessons of the World War Which May Be Applicable to Civil Practice, Mil. Surgeon **47:** 100 (July) 1920.
24. Baer, W. S.: The Treatment of Chronic Osteomyelitis with the Maggot (Larva of the Blow Fly), J. Bone & Joint Surg. **13:** 438-475 (July) 1931.
25. Banister, J. M.: The Immediate and Ulterior Results of the Great War in Their Relations to Medical and Surgical Practice and to the Matter of Disease Prevention, Nebraska M. J. **4:** 123 (May) 1919.
26. De Kruif, P. H.: Experimental Research on Effect of Intravenous Injection of Gum Salt and Salt Solutions, Ann. Surg. **69:** 297 (March) 1919.
27. Stookey, Byron: Surgical Consideration of Peripheral Nerve Injuries, Surg., Gynec. & Obst. **27:** 363 (Oct.) 1918.
28. Primrose, Alexander: The Value of the Transfusion of Blood in the Treatment of the Wounded in War, Ann. Surg. **68:** 118 (Aug.) 1918.

those who were stricken with empyema.[29] Not only was the subspecialty of thoracic surgery born, but it was fostered and grew with the skilful labors of such men as Yates, Lilienthal, Graham and Keller.[30] Patients with chronic chest suppuration, who prior to the war would have forfeited their lives, are now saved by radical thoracoplastic surgery. Furthermore, the war taught much concerning empyema.[31] It taught the importance of differentiating streptococcic suppuration from other types of empyema. It taught the importance of early closed drainage in acute empyema. The old, generally accepted method of rib resection and open drainage had often led to chronic suppuration, protracted invalidism and death. Closed drainage of acute empyema now cures many cases, thereby obviating the necessity for open drainage and mutilating thoracoplastic procedures.[32]

In dealing with abdominal wounds, surgeons learned the value of speed, large incisions to give visibility and accessibility, and accuracy.[33]

Skin grafting operations, always delicate and uncertain, taxed the skill of surgeons during the World War to such an extent that improved technics were developed. Skin grafting may now be attempted with far greater assurance of success than in the days prior to 1914.

In a substantial degree the World War contributed to the advancement of faciomaxillary and plastic surgery, under the leadership of Blair, Hayes, Hutchinson, Powers and others. It was largely due to the great wealth of clinical material, rather than to any revolutionary discoveries, that these advances were made.[34]

The paraffin treatment of burns, although a comparatively modest contribution, at least deserves mention as a development of the war.

Surgery shares honors with medicine for the clarification of the nature and treatment of traumatic shock. The brilliant work of Cannon, Crile and Porter threw new light on the pathology, prevention and treatment of this grave condition.[35]

INTERNAL MEDICINE AND ITS RELATED SPECIALTIES

Most of the medical men who responded to the call during the World War were qualified surgeons or appeared eager to demonstrate surgical ability. Internists were scarce, but, as the war emphasized the need for men trained in this field, greater interest was encouraged. This inevitably led to advancement of internal medicine as a specialty.

During the war, attention was directed to the importance of impaired function rather than to anatomic defects. Cognizance was taken of how a heart acted as well as how it sounded.[36] This growth in the physiologic concept of disease was prompted by the experience acquired by countless physical examinations of supposedly normal as well as defective men.

The war taught much concerning food deficiency diseases.[37] Necessity and the specter of starvation stimulated research, and the minds of interested medical men were focused on the prevention and correction of those diseases. It is only since the war, and largely as a result of it, that the world has become "vitamin minded." Although much of the investigation of vitamins has been exploited by commercial firms and faddists, there has nevertheless been a high degree of scientific accomplishment in this field. Then too the food shortage of the Central Powers was a gigantic, involuntary experiment in undernutrition.[38] It demonstrated gruesomely the harmful effects of undernutrition as exemplified by the sharp increase in the tuberculosis rate and mortality. It also showed the beneficial effect of restricted dietaries in lessening the incidence of diabetes mellitus in the underfed countries.

The World War may not justly be held responsible for the pandemic of influenza which swept over the earth in 1917-1918. But it is logical to surmise that more powerful batteries of medical thought and coordinated action were turned on this disease because of the war.[39]

Lethargic encephalitis appeared and demanded laboratory and clinical investigation which furthered knowledge of this dreaded malady.[40] Knowledge of the devastation caused by the streptococcus as a cause of pneumonia was acquired during the war.

The importance of measles as a serious disease as well as an epidemiologic problem was impressed on the medical profession.[41] Likewise the comparatively low virulence, occurrence and contagion rate of scarlet fever were a revelation to many physicians.

The World War epidemics of cerebrospinal fever demonstrated that this disease is a septicemia before meningeal involvement becomes manifest.[42] It was found that the best therapeutic results were obtained when antimeningococcus serum was given both intravenously and intraspinally. The results were shown to be better than when only the intraspinal administration of serum was employed.

Medical men with the world's military forces were organized in such a manner that they had the unusual opportunity of close professional liaison. They enjoyed diverse official and unofficial channels for dissemination of their individual and group experiences. Accumulated knowledge could be sorted, culled, concentrated and promulgated with greater facility throughout the medical world.[43]

The doctors of that time were privileged to observe how the respiratory diseases created havoc in the crowded cantonments at home and in the concentration camps of the rear areas. They were able to make comparisons and especially noted the relative mildness of the epidemic in the front lines and in the areas where men who were hardened by outdoor work predominated. But they found that it was the outdoor life and lack of

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30. Graham, E. A.: The Maximum Nonfatal Opening of the Chest Wall, J. A. M. A. **73**: 1934 (Dec. 27) 1919. Lilienthal, Howard: Thoracic Injuries, ibid. **72**: 839 (March 22) 1919.
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41. The Medical Department of the United States Army in the World War, vol. 9, Communicable and Other Diseases, 1928.
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43. Hurst, A. F.: Medical Diseases of the War, ed. 2, London, Edward Arnold, 1918.

crowding, rather than hardihood of youth, that minimized the spread of the infection in certain regions.[44]

The retention of clinical cases under military control, where their records could be followed and results of various forms of therapy evaluated, afforded a better groundwork for an ultimate victory over the respiratory diseases than was possible in civil communities. It is true that no startling discoveries were made. But much investigative work was undertaken, and the slow advance was accomplished more by a process of elimination than by brilliant discovery.

The stimulus to scientific endeavor, born of this pandemic of influenza and intensified by its prevalence in the armies of the warring nations, resulted in slow but important gains against this and other infectious diseases.[45]

Although influenza has not yet been conquered, the pneumococcic pneumonias have been tamed and classified, and potent therapeutic serums have been developed for a number of the common types.

Laboratory medicine was also called on to prepare an antitoxin against the fatal ravages of gas gangrene.[46] This was not accomplished until the latter part of the war, too late to be of widespread practical value to the wounded soldiers of that conflict. But this direct contribution of the World War has proved a godsend to thousands of sufferers since 1918 and, throughout the years to come, countless lives will be saved by this achievement of laboratory science. Medical men of eminence and many whose names are unsung aided in the bacteriologic investigation of gas gangrene and the development of an antitoxin.[47] Bull of Johns Hopkins and Paul De Kruif of the University of Michigan worked in America. Vincent, Strodel, Weinberg and Séguin in Europe were also notable investigators in this field.[48]

"Trench mouth" became a frequent and troublesome affliction of soldiers during the World War. Its prevalence and its influence on the noneffective rate of troops resulted in laboratory studies which revealed its cause and means of prevention.[49] Further experimental research demonstrated effective drugs which could be used to destroy the Vincent spirochetes and fusiform bacilli. As a consequence there are now satisfactory therapeutic measures for combating Vincent's stomatitis ("trench mouth").

In the realm of cardiovascular diseases, great progress was made particularly in the recognition and spread of knowledge concerning the vague and nebulous functional disorders of the heart.[50] Vasomotor instability, effort syndrome, soldier's heart and neurocirculatory asthenia became common phrases in the medical wards, at sick call and with medical examining boards during and after the war. Less conspicuously the World War fostered our knowledge of rheumatic heart disease, syphilitic heart disease and bacterial endocarditis.

As the postwar years have unfolded, war veterans suffering degenerative diseases have flowed in increasing number into government hospitals, affording hitherto unsurpassed opportunities for studying these diseases. The degenerative afflictions of middle life and older age groups most commonly encountered are the arteriosclerotic cardiovascular ailments. Spectacular and deadly in this group of diseases is coronary thrombosis. It is only since the war, and especially in the last decade, that the medical world has become "coronary conscious," following the pioneer work of Herrick in 1916.

The so-called war nephritis, of obscure etiology, led to extensive investigation of its cause and increased our medical knowledge of renal disease.

The work of Dr. Salmon with the war neuroses is notable. Exceptional opportunity arose for the study of neuropsychiatric diseases, particularly the functional nervous disorders.[51] In this group fell the ill named "shell shock" and the ill famed twilight zone of neuropsychiatric diagnosis, in which malingerers, mental and moral defectives, conscientious objectors and unclassified degenerates sought refuge and safety.[52]

Fever therapy was used for the first time as a therapeutic agent in the treatment of dementia paralytica during the World War. The blood of two malarial "shell shocked" German soldiers was injected into the veins of patients with the disease in an advanced form and produced encouraging results which led to further work along this line.

Minor mental deviations and endocrine disorders were studied more intensively because of the war and the clinical material which it furnished.[53] Studies pertaining to all factors which might influence troop strength and morale were encouraged.

Aircraft development was given a tremendous boost by the World War, and with it came advances in medical knowledge which gave sanction to the birth and growth of aviation medicine.[54]

PHYSICAL THERAPY, OCCUPATIONAL THERAPY AND ROENTGENOLOGY

Physical therapy and occupational therapy formerly were looked on with more or less suspicion and disdain. They were rated by many physicians as bastard offspring of legitimate medicine. But they proved themselves entitled to worthier consideration during the crippling years of the war. These frail and undernourished branches of medicine thrived during the rehabilitation era that followed the armistice.[55] They have established their usefulness, especially as adjuncts to orthopedics and neuropsychiatry, in hospitals throughout the world.

The most important benefit brought forth in roentgenology by the World War was the perfection of a highly satisfactory method of localization of foreign bodies.[56] This seemingly small contribution has been of great practical value. One cannot estimate the surgical shock that has been prevented or the number of lives saved by this contribution to medical science.

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MEDICAL ADVANCES IN COMBATING THE ILL EFFECTS OF CHEMICAL AGENTS

Chemical warfare, brewed in the laboratories of Germany, was voraciously lapped up by the famished dogs of war and belched forth in 1915 to strike terror and spread dismay among the Allies. Little did the horrified world of that day visualize the beneficent possibilities of this terrible weapon.

Contemporary with the development of chemical warfare agents came medical advances which gave protection from lethal gases.[57] These accomplishments in chemical warfare defense proved of paramount worth in war time. Necessity had once more become the mother of invention.

Perfection of defense against chemical agents has proved of value in civil industry as well as an adjunct in warfare. Investigation of toxic gases and other harmful chemical agents has focused attention on industrial hazards that had previously commanded scant attention.

Aside from benefits to industrial medicine, extensive laboratory investigation indicates that chemical warfare may be more humane than machine gun fire and high explosives.[58]

Headed by Major General H. L. Gilchrist, an able medical officer whose administrative efficiency and experience in chemical warfare admirably fitted him for its chief, the Chemical Warfare Service of the United States Army carried on extensive research following the war. The laboratories of this service have supported the World War casualty records in acclaiming chemical warfare more humane than warfare which inflicts gunshot wounds.[59] The general public is slow in recognizing this fact, and many will doubtless refute the contention that chemical warfare has contributed to the advancement of medicine.

PREVENTIVE MEDICINE, PUBLIC HEALTH AND SANITATION

The great war, pregnant with strife and upheaval, delivered into the world an era of preventive medicine.

In 1914 it was discovered that botulism might be caused not only by contaminated meats but by infected vegetables which had been improperly canned.[60] Food shortage encouraged home canning. This directed attention to the potential danger of widespread outbreaks of botulism. The effects which serious outbreaks due to contaminated foodstuffs would have on military morale accelerated research and propagation of knowledge concerning this disease and its prevention.

While it cannot be said that the war contributed directly to the eradication of typhoid, dysentery, tetanus, meningitis or any of the infectious and contagious diseases, one important lesson was driven home. The war demonstrated beyond all doubt the efficacy of typhoid vaccine and tetanus antitoxin as prophylactic agents. It was possible to compare large groups of men who were vaccinated with large groups of men who were not vaccinated. The incidence of typhoid developing in those who had received protective vaccine was negligible and in striking contrast to the high incidence in armies in which such vaccination was not compulsory.[61]

Increased knowledge of the dangers of overcrowding and of the importance of isolating cases and segregating contacts exposed to meningitis, influenza and other infectious respiratory diseases was acquired during the war, when the importance of conservation of man power intensified efforts toward disease control. It was this mass demonstration of effective and ineffective control measures, and the spread of general knowledge among the public concerning effective control measures, which contributed to advancement in this field, rather than important new discoveries.[62]

Standardized methods or controlling and treating venereal diseases were developed in most of the mobilized armies. These methods were later made applicable to the management of such diseases in civil life.[63] After the war, standardization of treatment was adopted throughout the world on a far greater scale than was in effect prior to the war. Likewise, measures aimed at control of the social diseases were promulgated. Educational programs to combat venereal infections were first encouraged in a large way during the World War.

The social and sanitary measures adopted for preventing venereal diseases inhibited the spread of these disabling afflictions among our troops. These measures, based not on sentimental or moral ideas but on a practical working plan, enormously increased the strength and efficiency of the American fighting forces.

The army's candid system of venereal disease control, developed during the World War, should be classed as an outstanding contribution to the advancement of preventive medicine.[64] Civilian populations throughout the world are now approaching the problem in somewhat the same manner. Enlightened public opinion now encourages educational and other practical control measures. To eliminate the fear and shame and vice consciousness which has become attached to the word "syphilis." Paul De Kruif goes so far as to advocate that it become divorced from loathsome thoughts and be made a cozy, fireside word: a word used in spelling bees and crossword puzzles.

Trench fever, a common disease of the World War, is rare today. Its disappearance is due largely to the improved sanitary knowledge which makes it possible to inhibit its development and prevent its spread. Its former importance can be realized when World War archives are consulted and reveal that at one time approximately 60 per cent of all hospital patients of the British Expeditionary Force were suffering from trench fever. One third of all the sickness in the British army during the World War is thought to have been caused by trench fever. Yet today this louse-borne scourge is scarcely heard of—a forgotten disease conquered as a result of the researches of the American Red Cross Trench Fever Commission.

The Report of the Trench Fever Commission of the American Red Cross Research Commission, published in 1917, is a medical classic of great scientific value and a comprehensive treatise of absorbing interest.[65]

The intensive study and conquest of trench fever led to postwar research concerning other rickettsial diseases. This opened up for more careful clinical investigation the wide and thinly explored field of filtrable virus diseases. Subsequent accomplishments in this

57. Vedder, E. B.: The Medical Aspects of Chemical Warfare, Baltimore, Williams & Wilkins Company, 1925.
58. Gilchrist, H. L.: Humanity of Chemical Warfare, Mil. Surgeon **57**: 529-538 (Nov.) 1925.
59. The Medical Department of the United States Army in the World War, vol. 14, Medical Aspects of Gas Warfare, 1926.
60. Dickson, E. C.: Botulism, J. A. M. A. **69**: 966 (Sept. 22) 1918.
61. von Krehl, L.: Infectious Diseases of the Typhoid Group in the Great War, München. med. Wchnschr. **81**: 1195-1196 (Aug. 3) 1934, and comment by Bofinger, ibid. **81**: 1355 (Aug. 31) 1934.
62. Bainbridge, W. S.: War Time Lessons Applied to Peace Time Warfare, U. S. Nav. M. Bull. **29**: 608-614 (Oct.) 1931.
63. Irvine, H. G.: Syphilis and Venereal Diseases as a Public Health Problem, J. A. M. A. **71**: 1029 (Sept. 28) 1918.
64. Pusey, W. A.: Handling the Venereal Disease Problem in the U. S. Army in the Present Crisis, J. A. M. A. **71**: 1016 (Sept. 28) 1918.
65. Report of Commission of American Red Cross Research Committee: Trench Fever, New York, Oxford University Press, 1918.

field may be attributed in part to the wartime challenge of trench fever and the research prompted by this disease.

The prevalence of malaria and other protozoan diseases became a military problem of importance in Europe as well as in tropical and subtropical theaters of operation. Appreciable advance was made concerning epidemiology of protozoan infections.[66]

As a result of the war and the acute problem facing European countries, unusual interest became centered in child welfare.[67] This interest was accentuated by realization that many of the numerous physical defects disclosed by military examining boards might have been prevented by intelligent thought on the subject of child conservation in the past. Sharing the problem of child welfare, pediatrics and public health pushed forward toward new heights.

The return of World War doctors to civil life, trained in sanitation, and the good effects of sanitary control impressed on the minds of the soldiers returning to peaceful pursuits were doubtless powerful factors favoring the future of preventive medicine.[68] The shortcomings of the past, with respect to hygiene, and the needs for the future were emphasized. The war fostered the propagation of general knowledge concerning sanitation and especially concerning the importance of sputum, excreta, flies, lice and other vermin in the spread of disease.[69]

The education of the public in preventive medical measures is clearly exemplified by the campaign of the American Typhus Fever Commission in poverty-stricken, chaotic Serbia in 1919.

The widespread death-dealing epidemics of typhus fever in Serbia, Poland and Russia, conceived in the hellish poverty and filth of the latter months of the war, bore most bitter fruits in 1919 as an aftermath of the great conflict. Even this fearful disease scourge, viewed in the light of a later era, may be looked on as a blessing in disguise, for it inspired the United States government to send scientific aid and practical relief into Serbia and Poland.

When the large, well organized Typhus Fever Commission went into Serbia, it was given dictatorial powers by the Serbian government that it might save the stricken country. Had the people of Serbia been denied this outside aid, the great plague would have decimated their population, and the survivors would have been none the wiser.[70] Other epidemics would have followed, and superstitions and fatalistic philosophies would have continued to prevail, had not the American Typhus Fever Commission plunged into the fray and carried its magnificent educational program to successful completion. Due credit is given to the Serbian government for its wholehearted assistance, and to the people of Serbia for their cooperation and gratitude.

Under the heading of preventive medicine, it should be mentioned that submarine warfare and its problems focused medical attention on the dangers of subventilation, the hazards of carbon monoxide and caisson disease. This aroused educational programs to prevent such conditions and led to developments in air conditioning.

The transportation of huge expeditionary forces by ship and train necessitated crowded accommodations and brought many sanitary defects sharply to the attention of responsible officers, whose objectives were the correction of sanitary errors when and if possible. The modern rat-proofing of ships, docks, warehouses and other buildings was promulgated by sanitary studies and experience gained largely from the World War.

There can be no doubt that progress in epidemiology was furthered by the war. That portion of Dr. Victor Vaughan's monumental three-volume work "Epidemiology and Public Health," dealing with meningitis, influenza and the respiratory diseases in general, is based largely on experiences of the World War.[71] These notable volumes have received worldwide recognition as an authoritative reference work on epidemiology.[72]

As a testimonial of the importance of preventive medicine as demonstrated during the World War, at least three great European powers, England, France and Italy, have each placed in their cabinets a minister of health.

MEDICAL SUPPLIES AND EQUIPMENT

The World War brought forth a greater standardization in medical supplies and equipment than had ever existed before. It created a demand for new and improved methods of manufacture, procurement and distribution.[73]

Colonel (later Brigadier General) C. R. Darnall had some years earlier achieved a contribution to sanitary science the magnitude of which is scarcely yet realized, notably the purification of drinking water by liquid chlorination.[74] The practical application of his investigations and ingenious invention is now world wide in scope.[75] When the United States joined the Allies in 1917 he was selected to organize and administer the Division of Finance and Supply of the Medical Department of the Army. Under his judicious management more than $350,000,000 worth of medical supplies and equipment were purchased and disbursed, with a smooth efficiency in startling contrast to the inadequate and chaotic medical supply administration of previous wars.[76]

Occasional instances wherein American medical supplies and equipment were insufficient or lacking were invariably traced to exigencies of the service beyond the control of the Medical Department, such as delays incident to priority of manufacture or to priority of shipment accorded other war materials.

The splendid accomplishment of the Medical Supply Division not only resulted in a greater standardization of medical material but opened the way for further development and advance of American commercial research and manufacture of chemicals and drugs as well as other medical supplies and equipment. It uncov-

66. Castellani, Aldo: Notes on Tropical Diseases Met with in the Balcanic and Adriatic Zones, J. Trop. Med. & Hyg. **20:** 219 (Oct. 1) 1917.

67. White, W. C.: The Work of the American Red Cross Bureau of Tuberculosis in France, Am. J. M. Sc. **156:** 415 (Sept.) 1918.

68. Lambert, S. W.: What War Has Done for Medicine, J. Florida M. A. **4:** 261 (March) 1918.

69. Vedder, E. B.: The Epidemiology of the Sputum-Borne Diseases and Its Relation to the Health of the National Forces, Mil. Surgeon **44:** 123 (Feb.) 1919. Hunter, William: Prevention and Arrest of Lice-Borne Diseases by New Methods of Disinfection, Lancet **2:** 347 (Sept. 14), 377 (Sept. 21) 1918.

70. Craig, C. M., and Fairley, N. H.: Typhus Fever (Observations on a Serological Test: Weil-Felix Reaction), Lancet **2:** 385 (Sept. 21) 1918.

71. Vaughan, V. C.: Epidemiology and Public Health, St. Louis, C. V. Mosby Company, 1922.

72. Obituary: Victor Clarence Vaughan, 1851-1929, Am. J. Pub. Health **20:** 53-55 (Jan.) 1930.

73. Moseley, G. V.: Industry and National Defense, Mil. Surgeon **68:** 1 (Jan.), 346 (March), 478 (April) 1931.

74. Darnall, C. R.: The Purification of Water by Anhydrous Chlorine, J. Am. Pub. Health A. **1:** 783 (Nov.) 1911.

75. Elms, J. W.: Water Purification, New York, McGraw-Hill Book Company, Inc., 1917, pp. 375-380.

76. The Medical Department of the United States Army in the World War, vol. 1, p. 227.

ered the need and established the groundwork for medical industrial mobilization planning.[77]

As an outgrowth of experience gained during the war, a need was seen by the Medical Supply Division for protecting the interests of the government when contracting for the purchase of drugs and other material under the provisions of regulations requiring competitive bidding. Thus there was developed a testing laboratory at the Army Medical Supply Base at Brooklyn, which insures that drugs and other supplies come up to the standards specified in the purchase contracts. This has resulted in higher quality goods and has led to keener competition on the part of manufacturers. Dishonest bidders are more likely to become discouraged, eliminated and fall into disrepute.

World War experience with medical supplies in all the belligerent countries resulted in improvements which are a distinct contribution to the advancement of medicine.

SUMMARY

We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders' fields.

Thus laboring under shell fire and in the blood of his dressing station on the Western Front did a Canadian army doctor lay bare his soul. And throughout the war-stricken world thousands on thousands of other weary doctors labored. The full extent of their accomplishments will never be known.

On the preceding pages are enumerated some of the contributions of the World War to the advancement of medicine. These may be briefly summarized as follows:

1. In the field of medical organization, education and literature the war contributed much to the advancement of medicine. The popularization of group medical practice was an immediate result of the war which showed the medical world the desirability of teamwork, specialization and logical division of labor. This has expedited professional work and has elevated the quality and efficiency of the service rendered. The examinations of conscripts focused public attention on both physical and mental unfitness and the medical-sociological problems incident thereto. The medical and military professions learned the value of cooperation in relation to any future mobilization.

2. In surgery and its related specialties, concrete progress was made as a result of the World War. The clinical material furnished by the war casualties gave impetus to improvements in surgical technic, increased surgical knowledge and improved methods of treatment of wounds. Débridement, the Carrel-Dakin technic, improved management of orthopedic cases, traumatic shock, chronic osteomyelitis, empyema, chest surgery, septic arthritis and blood vessel surgery are but a few of the outstanding achievements. The vast experience gained by all belligerent nations concerning traumatic surgery and the standardization of acceptable forms of treatment were important contributions to medicine.

3. In the realm of internal medicine and its related specialties, notable advance was made as a result of the war. Starving nations studied the science of nutrition and food deficiency diseases. Much investigation was stimulated, although slow progress was made, with the respiratory infections. An antitoxic serum for gas gangrene was discovered. Increased knowledge was acquired concerning cardiology. Neuropsychiatry was spurred to new attainments. The need for better care of the permanent psychoses was emphasized. Trench mouth was conquered. The prevalent and puzzling disorder known as "war edema" resulted in studies which increased our knowledge of renal disease. Treatment of neurosyphilis with malaria inoculation was instituted.

4. Physical therapy and occupational therapy proved their worth and expanded into valuable adjuncts of such specialties as neuropsychiatry and orthopedics. Roentgenology during the World War was enriched by the perfection of a satisfactory method of localization of foreign bodies.

5. Chemical warfare promoted research and accomplishment in overcoming the ill effects of chemical agents. These contributions aided industrial medicine. Studies of the effects of chemical agents furnished valid evidence that chemical warfare is more humane than warfare which inflicts gunshot wounds.

6. Preventive medicine was elevated to a much higher plane of importance than it had previously occupied. The cause of trench fever, which made great inroads on the effective rate of troops in Europe, was discovered and its ravages controlled. The efficacy of typhoid vaccine and tetanus antitoxin was demonstrated on a grand scale. Standardized methods of controlling and treating venereal diseases were developed. The promulgation of general knowledge concerning sanitation was expanded and accelerated.[78]

The great European epidemics of typhus fever, immediate aftermath of the World War, afforded opportunity for educational campaigns which did much to further the advancement of medicine not only in the stricken countries but throughout the world.

Advances in air conditioning and the propagation of knowledge concerning the dangers of carbon monoxide, subventilation and caisson disease resulted from problems raised by submarine warfare and from the manufacture and employment of munitions. Likewise, sanitary problems of the war stimulated improvements in sanitary devices and brought about the rat-proofing of ships, docks and warehouses. Maintenance of health during the war acquired a new, practical value, which called attention of intelligent people to the fact that it could also be of practical value in peace.

In general, a broad extension of clinical activities in the field of public health was brought about as a result of World War experience. The extraordinary advances in preventive medicine between the Spanish-American and the World War had practical application during the latter conflict. The value of these earlier accomplishments in the field of sanitation was clearly demonstrated between 1914 and 1918. Comparisons between armies which made full use of these earlier advances in preventive medicine and armies which failed to do so could be studied. The contrast was striking. Further progress in laboratory research and in the application of preventive medicine was thus encouraged. Investigators renewed their studies with enthusiasm, and knowledge became more widespread. The importance of sanitation and preventive medicine became more generally recognized.

7. Substantial improvements in the standardization, manufacture and distribution of drugs and other medical

77. Ashburn, P. M.: A History of the Medical Department of the United States Army, Boston, Houghton-Mifflin Company, 1929, pp. 308-309.

78. Downes, R. M.: What Medicine Owes to War and What War Owes to Medicine, J. Roy. Army M. Corps **67**: 381 (Dec.) 1936.

supplies resulted from the World War. When shortage was threatened because of the war there was a stimulus to enter this manufacturing field. American commercial research and manufacture of chemicals, drugs and other medical supplies was encouraged. Improvements in quality of supplies was likewise stimulated by the creation of testing laboratories which discouraged dishonest bidders and purveyors of inferior goods.

CONCLUSIONS

That some good may come from all evil is no better illustrated than by the benefits to humanity that have arisen from the ashes of the World War.

The richest contributions of this great conflict to the advancement of medicine have not been new or revolutionary discoveries but standardization of procedure and equipment together with dissemination of knowledge based on war experience. As the years unfold, the light of knowledge increases and reveals more clearly how medicine has advanced through the storm and blood of the World War.

Many of the discernible and less abstract contributions have been enumerated and discussed in the foregoing pages. In addition to its concrete and tangible achievements, the World War contributed to the advancement of medicine by instilling into the profession a higher sense of duty and idealism, a stronger moral fiber and a deeper pride of constructive accomplishment.

Lieutenant William Fitzsimons, a young army medical officer, was the first American soldier killed in France after the United States entered the war. More than three thousand British medical officers made the supreme sacrifice, while more than twenty-three thousand British physicians were wounded in action. The staggering toll of medical officers of other nations who became casualties in the World War is mute tribute to their patriotism, fearlessness and unselfish devotion to the amelioration of human suffering. They were classed as "noncombatants," yet they displayed a courage and self sacrifice no less than that of their combatant brothers of the line, to whom they rendered such invaluable service.

What contributions of the World War are more constructive, more enduring and more of a boon to posterity than the contributions of wartime physicians to the advancement of medicine? Their loyal and efficient labors engendered an added esteem, prestige and respect for medicine.

We are forced to the conclusion that, as advances were made in the destructive mechanism of war, so also protective and constructive forces struggled for supremacy. Many of the beneficent achievements counterbalanced or outweighed the accomplishments of destructive agents. Many of these admirable contributions might never have come to light except through the darkness and despair of war.

When the medical men and women of the World War come to their journey's end, may their good work be carried on. And may this challenge of a Canadian Army surgeon live to inspire the countless millions yet unborn:

> Take up our quarrel with the foe,
> To you from failing hands we throw
> The torch—be yours to hold it high.
> If you break faith with us who die,
> We shall not sleep, though poppies grow
> In Flanders' fields.

Battle scarred, but enriched by its World War achievements, Medicine marches on.

Council on Pharmacy and Chemistry and Council on Physical Therapy

COUNCILS' COMMITTEE ON CONTRACEPTIVES

THE FOLLOWING WAS PREPARED FOR THE COUNCILS' COMMITTEE ON CONTRACEPTIVES BY GILBERT W. BEEBE AND CLARENCE J. GAMBLE, M.D. IN AUTHORIZING PUBLICATION OF THE REPORT THE COMMITTEE EXPRESSES ITS APPRECIATION TO THE AUTHORS OF THE PAPER FOR THEIR COOPERATIVE AID.

PAUL NICHOLAS LEECH, Secretary
COUNCIL ON PHARMACY AND CHEMISTRY.

HOWARD A. CARTER, Secretary
COUNCIL ON PHYSICAL THERAPY.

CLINICAL CONTRACEPTIVE RESULTS IN A SMALL SERIES OF PATIENTS

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In 1933 a metropolitan general hospital inaugurated a limited contraceptive service for obstetric patients. The department was not equipped to provide methods requiring individual fitting and believed that a simpler method might have wider acceptance than diaphragm and jelly and thus facilitate child spacing for a larger proportion of patients. Of the simple methods then available, jelly used alone seemed the most promising. A lactic acid jelly[1] was selected on the basis of apparently satisfactory clinical use elsewhere. This was offered to patients at cost, 20 cents for a tube of jelly and 10 cents for an applicator. In order that they might know of alternative and supplementary methods which might provide greater protection than jelly alone the patients were also given information on the greater effectiveness of condom plus jelly, on the low risk days of the menstrual cycle and on the location of an extramural clinic where a diaphragm might be fitted.

Two efforts at follow-up have been made in order to study the fertility of the patients thus advised. Both of these have been reported elsewhere,[2] the present paper being a summary of the second report, which gives in greater detail both the procedure and the results.

THE PATIENTS

The selection of the sample of 197 patients was such that all were white, of demonstrated fertility and possessed of sufficient interest in the control of their reproduction to purchase the supplies offered. The occupational distribution of the husbands, only 5 per cent of whom were unemployed at the second survey period, December 1936 to February 1937, shows that 14 per cent were clerical or white collar workers, 43 per cent skilled laborers or foremen, 40 per cent semiskilled or unskilled laborers, and 3 per cent of unspeci-

From the National Committee on Maternal Health, Inc., 2 East One Hundred and Third Street, New York.

1. Lactikol B. The authors do not wish to imply that Lactikol B is the only preparation which would be expected to yield results commensurate with those reported here. The present active ingredients given by the manufacturer are 2 per cent lactic acid, 0.05 per cent oxyquinoline sulfate, 16 per cent glycerin, blended carbohydrate gum base. An initial *p*H of 3.1 and the presence of gum karaya and gum tragacanth have been reported by Leo Shedlovsky, Ph.D. (The Composition of Some Commercial Contraceptive Jellies, J. Contraception **4**: 179-188 [Oct.] 1939.)

2. Gamble, C. J., and Beebe, G. W.: The Clinical Effectiveness of Lactic Acid Jelly as a Contraceptive, Am. J. M. Sc. **194**: 79-84 (July) 1937. Beebe, G. W., and Gamble, C. J.: The Effect of Contraception on Human Fertility, Human Biology **10**: 372-387 (Sept.) 1938.

fied occupation. On the average the wives had completed eight grades of schooling, had married at the age of 20, and in six years of marriage had conceived 2.7 times, with 2.4 pregnancies terminating in live birth.

METHOD OF ANALYSIS

The present study has a bearing on what has been called the "effectiveness" of contraceptive methods. Unfortunately the concept of the contraceptive effectiveness of a method or material lacks precision. Little study of reproduction is required to reveal the operation of a number of other variables any one of which may be highly significant in itself. The exact role of a contraceptive method or material cannot yet be delineated from clinical tests alone. Hence it is at present unwarranted to attribute an observed change in fertility to a particular contraceptive with the implication that the change would otherwise not have occurred. For that reason this analysis is stated not in terms of "effectiveness" or "failures" but rather in terms of the risk of conception for a group of women according to the nature of their contraceptive efforts over some period of time. Observational data on contraceptive behavior may be of different kinds. Here the only distinctions made are between the use of some or no contraception and among methods of contraception.

TABLE 1.—*Months of Exposure, Pregnancies and Pregnancy Rates Before the Hospital Selection by Contraceptive Practice and by Order of Pregnancy* *

	All Pregnancies			First Pregnancies			Second and Subsequent Pregnancies		
Contraceptive Practice†	Exposure	Pregnancies	Rate ‡	Exposure	Pregnancies	Rate ‡	Exposure	Pregnancies	Rate ‡
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All experience.....	9,204	505	66	2,193	181	99	7,011	324	55
Without contraception	3,881	320	99	1,544	153	119	2,337	167	86
Total contraception...	5,323	185	42	649	28	52	4,674	157	40
Withdrawal alone...	1,315	40	37	80	5	‡	1,226	35	34
Douche alone.....	1,480	70	57	136	12	106	1,344	58	52
Condom alone.....	1,045	19	22	195	5	31	850	14	20
All other methods...	1,483	56	45	229	6	31	1,254	50	48

* The differentiation between rates for first and for second and subsequent pregnancies follows from the fact that rates for first pregnancies tend to be significantly higher than rates for second and subsequent pregnancies, perhaps partly because of lactation. In this table first pregnancy exposure means exposure up to the first conception. Second and subsequent pregnancy exposure includes all which follows the termination of the first conception.

† Pregnancies per hundred woman-years of exposure to the risk of conception.

‡ Less than 100 months of exposure.

Risk of conception is a concept developed by Pearl [3] in order to permit more refined analysis of the effect of contraception on the reproduction of groups of women. The idea of risk pervades all modern vital statistics and is especially useful in its application to natality and mortality data. Just as a birth or a death rate may be obtained from knowledge of the number of births or deaths in a population of specified size during a limited period, usually one year, so a pregnancy rate may be formed from the number of conceptions divided by the number of women at risk during a definite time period. Specifically, a woman is said to be at risk whenever pregnancy is possible, and from the elapsed time of observation deductions are made for gestation, the puerperium, abstinence, sterilization and the like. The result is termed exposure time and is computed in months. The pregnancy rate measures the risk of conception.

In this study every month of exposure has been classified according to the method of contraception practiced, if any, and no distinction made on the basis of alleged regularity of use. The risk of conception with a given method, therefore, represents a heterogeneous experience in this respect and, in view of the prime significance of this factor in contraception, any difference in rates for two methods may represent merely a different degree of care and skill in use. In defense of this procedure, which apparently fails to differentiate between dissimilar elements, it may be observed that relatively little weight as reliable evidence can in general be attached to the statements of contraceptive patients regarding their assiduity and that the clinician needs an estimate of conception risk not under conditions of perfect use but under conditions of actual use. Interest and competence in contraception vary with the group studied and at present this source of variation renders difficult the comparison of results obtained with different populations. There may also be important differences in skill and regularity within groups with respect to time periods or methods employed.

PRECLINIC PREGNANCY RATES

It must be clear at the outset that the reproductive histories on which this study is based record the verbal responses of women with varying lengths of time separating them from their reported experience. While serious systematic errors are not anticipated, their entire absence from the data cannot be guaranteed. Most of the women studied had practiced some form of contraception before admission to the hospital, and 58 per cent of their exposure was classified as contraceptive. However, sharp differences were observed between experience before and after the first pregnancy and among subdivisions of the group. Only about 30 per cent of the exposure before the first pregnancy was classified as contraceptive, whereas approximately 67 per cent of the subsequent experience fell within this category. Moreover, there were marked religious and occupational differences in the extent to which contraception was used before and after the first pregnancy. The Protestant segment had practiced contraception 38 per cent of the time, and the Catholic 19 per cent, before the first pregnancy. Thereafter the percentages (67 and 66) were virtually identical. The clerical workers had observed contraceptive precautions 19 per cent of the time, and the manual workers 33 per cent, before the first pregnancy. After the first pregnancy the percentages were 82 and 64 respectively.

In table 1 the amounts of various types of contraceptive exposure appear in column 2, where three folk methods, withdrawal, douche and condom, used alone, account for about 70 per cent of the total. Perhaps a better measure of their relative importance in the contraceptive effort of the group is obtained by adding that portion of the exposure classified under other methods and during which any of these three methods figured as alternates or supplements. This yields approximately 90 per cent.

The preclinic risk of conception was 66 pregnancies per hundred woman-years of exposure to the risk of conception. On analysis by type of contraceptive endeavor, this aggregate rate breaks up into rather different components, as may be seen in column 4 of

3. Pearl, Raymond: Contraception and Fertility in 2,000 Women, Human Biology **4**: 363-407 (Sept.) 1932; Factors in Human Fertility and Their Statistical Evaluation, Lancet **2**: 607-611 (Sept. 9) 1933.

table 1. As would be expected, there is a large and statistically significant difference between the conception risk while contraception was practiced and the risk while no contraceptive precautions were observed, the noncontraceptive rate of 99 being more than twice the contraceptive rate of 42. Within the varieties of contraceptive experience differences may also be noted, the risk when the condom was used being the lowest at 22 and the risk with the douche the highest at 57. These differences indicate that this highly selected urban group not only had attempted family limitation but also had effected a material reduction in the risk of contraception before the hospital experience. An approximate measure of the "effectiveness" of their contraceptive effort is the difference between the contraceptive and the noncontraceptive rates stated as a percentage reduction in the noncontraceptive risk, about 60 per cent.

POSTCLINIC PREGNANCY RATES

The hospital episode, therefore, did not introduce contraception to the group for the first time, and conceivably its influence on subsequent fertility may have been relatively slight. It provided a criticism of previous methods, emphasized the utility of a relatively new material, contraceptive jelly, and stressed the value of the condom in reducing the chance of conception. The present data are an insufficient basis for determining whether or not these patients might have achieved comparable postclinic reductions in pregnancy rates without the hospital advice. The postclinic experience of those who refused the advice would not constitute an adequate control and for that reason no attempt has been made to introduce a control group. The observations merely measure the postclinic reduction in the risk of conception as an apparently complex function of prior experience with contraception, the proximity of parturition, the advice given, and a tendency to shift from methods which had served none too well to different methods of greater promise. Hence these observations permit a rough estimate of the extent to which similar postpartum hospital populations may be expected to succeed in lowering their risk of conception when such populations are selected for interest in family limitation.

The pregnancy rate fell from 55 to 17 in the postclinic period, which ranged from thirteen to forty-two months and averaged twenty months. Since all the cases were postnatal, it might be thought that postpartum amenorrhea and lactation were factors in the reduction. However, when a contraceptive rate was calculated for the period beginning seven months after parturition, no marked difference was found, and from this fact, together with the level of the postclinic noncontraceptive pregnancy rate, it seems fair to conclude that amenorrhea and lactation played little, if any, role in lowering the pregnancy rates.

That the reduction in the conception risk reflects primarily an alteration of contraceptive habits is clear from the pattern of the rates in columns 2 and 5 and from the proportions of contraceptive and noncontraceptive exposure as set forth in column 3. The percentage of exposure classified as contraceptive rose sharply above the preclinic 67 to 94. All the individual contraceptive rates fell, the total declining from 40 to 12. The postclinic rate of 12 represents a reduction of approximately 85 per cent below the noncontraceptive risk of conception of this group. The rate for jelly used alone was 15. Differences among individual contraceptive rates in the postclinic period are insignificant because of small numbers and the variability of such rates, but the details are given in table 2. The rate for withdrawal is exceptionally low and may be taken to illustrate one type of selection involved in postclinic rates. Those whose preclinic withdrawal experience had been comparatively satisfactory were more willing to try it again than those with less favorable results. This may be shown by the large and significant difference between the preclinic withdrawal rates for two groups; those who failed to return to it had a rate of 89, and those who resumed its use had a rate of 24.

ACCEPTANCE OF THE METHOD ADVISED

Of the total sample of 197 patients only 128, or 65 per cent, ever tried the jelly purchased from the hospital. Of those who tried it, 26 per cent were users at the last follow-up visit. At the end of one year, 24 per cent of the original 197 patients and 38 per cent of the 128 users were depending on the jelly. After two years, 15 per cent of all women followed up this length of time, and 21 per cent of those who ever used the jelly and had two years of follow-up were relying on it.

TABLE 2.—*Months of Exposure, Pregnancies and Pregnancy Rates Before and After the Hospital Selection by Contraceptive Practice for Second and Subsequent Pregnancies* *

Contraceptive Practice	Preclinic Rate †	Postclinic		
		Exposure	Pregnancies	Rate †
(1)	(2)	(3)	(4)	(5)
All experience	55	3,911	56	17
Without contraception	86	229	18	94
Total contraception	40	3,682	38	12
Withdrawal alone	34	445	1	3
Douche alone	52	237	6	30
Jelly alone	‡	726	9	15
Condom alone	20	946	6	8
All others	48	1,328	16	14

* Comparison is restricted to second and subsequent pregnancies because all the postclinic experience was of this nature and the preclinic risk varied by order of pregnancy.
† Pregnancies per hundred woman-years of exposure to the risk of conception.
‡ Less than 100 months of exposure.

While it is not expected that a single present method of contraception would be adopted by a large majority of a population given contraceptive advice, the rate of acceptance in the present series is perhaps smaller than might have been anticipated. It would appear also that there were certain aspects of the service which tended to diminish this rate. Exhaustion of supplies and lack of confidence were the most frequent reasons given for discontinuance. The former seems to have been important in that patients were required to make trips to the hospital for jelly and that some women found this difficult or discouraging. It is thought that lack of confidence may have been furthered by the manner in which the patients were advised. The follow-up worker found that many women had lacked confidence in the method at the very beginning and this seemed to be related to the variety of information given and to the stress on the additional value of the condom. More than half of those who never used the jelly declared that they lacked confidence in it.

SUMMARY

A selected group of 197 contraceptive patients from a hospital obstetric service has been studied for variations in the risk of conception associated with contra-

ceptive practice. It has been shown that before admission:

1. There were the expected religious and occupational differences in the extent of contraceptive practice.
2. While contraception was practiced the risk of conception was almost 60 per cent below that incurred without contraception.
3. Withdrawal, douche or condom, used alone or in combination, was relied on in 90 per cent of the contraceptive practice.
4. The risk of conception while the condom was used alone was 80 per cent below the noncontraceptive level, the corresponding figure for the douche being 40 per cent.

After the hospital had given advice to this interested group:

1. The relative dependence on contraception increased from 65 to 95 per cent.
2. The pregnancy rate for contraceptive practice declined about 70 per cent below the preclinic level, all methods contributing to the increase in protection; the contraceptive rate was about 85 per cent lower than the preclinic noncontraceptive rate of this group.
3. Only 65 per cent of those who purchased the supplies ever used them, and of these 25 per cent were continuing their use 20 months later.
4. It seemed that the technic of instruction, in suggesting alternatives, and the relative inaccessibility of supplies for some had combined to discourage the use of the method advised.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT. PAUL NICHOLAS LEECH, Secretary.

THE PRESENT STATUS OF LIPOCAIC

Lipocaic is the name which has been suggested by Dragstedt and his co-workers for a new pancreatic hormone concerned in some way with the normal transport and utilization of fat, evidence for which was reported by these investigators in 1936. The authors presented evidence [1] to show that the fatty degeneration and infiltration of the liver which occur in depancreatized dogs treated with insulin is not due to the absence of pancreatic juice (enzymes) or to the small amounts of choline and lecithin present in raw pancreas. They concluded that the beneficial effect of the latter was probably due to some specific substance. They obtained such a substance in alcoholic extracts of beef pancreas, for which was suggested the name Lipocaic.[2] The method of preparation of the extract was described in detail in a subsequent report.[3] About the same time Dragstedt and his co-workers [4] reported the development of typical atheromatosis and arteriosclerosis in six depancreatized dogs which were maintained for from six to nine months on insulin but which were repeatedly permitted to develop fatty livers of lipocaic deficiency.

Dragstedt [5] has reviewed the results of these investigations and indicates that the evidence seems sufficient to warrant the conclusion that the active substance in the pancreas is probably not choline and, since it is not present in the external secretion of the gland, that it represents a specific internal secretion or hormone distinct from insulin. He states that, while the function of the hormone is still but little understood, the known experimental facts indicate that removal of the pancreas in dogs produces in addition to hyperglycemia a lipemia, acidosis and marked accumulation of fat in the liver within two or three days, which can be attributed to a lack of insulin; whereas, with the administration of food, active pancreatic juice (enzymes) and sufficient insulin, early lipemia, acidosis and accumulation of fat in the liver disappear, but later there appears decreased tolerance to insulin and a reduction in the concentration of blood lipids as evidence of the fatty liver of lipocaic deficiency. In 154 depancreatized insulin-maintained dogs examined post mortem the late fatty enlargement of the liver failed to develop in only thirteen animals. If an extract the equivalent of from 60 to 100 mg. of dried pancreas is administered daily either orally or subcutaneously to such an animal when insulin tolerance (dextrose excretion) is minimal, the blood lipids rise to normal and fat disappears from the liver, as demonstrated by biopsy. The author points out that four cases of the latter form of hepatomegaly in human beings with diabetes mellitus well controlled by diet and insulin are reported to have been successfully treated with lipocaic. He suggests that the high incidence of presenile arteriosclerosis as a complication in diabetes, believed by some to be increased with high fat diets, may be related to lipocaic deficiency on the basis of the evidence that arteriosclerosis is produced in depancreatized dogs maintained with such deficiency.

Wolffe [6] treated 100 cases of diabetic and nondiabetic atherosclerotic gangrene with from 1 to 3 cc. daily or alternate daily injections of a pancreatic tissue extract (Desympatone, Sharp & Dohme, Inc.) in conjunction with other therapy and obtained about 75 per cent healing in all cases. The author attributes the failure of the usual diabetic management in many cases of gangrene to the lack in insulin of some substance present in the pancreatic extract. He concludes that pancreatic extract (enzyme free) in diabetic and arteriosclerotic gangrene seems not only to produce early arrest of pathologic processes but also to stimulate repair more rapidly and completely than any other conservative method. He indicates that the active substance of enzyme-free pancreatic extract exerts beneficial influence on lipoid metabolism in general and suggests that the combination of insulin, diet and pancreatic extract may prevent the early appearance of atherosclerosis in diabetes.

Reports of other groups of investigators on the effects of pancreatic extracts have appeared in the foreign as well as the American literature. Neither Wolffe nor Dragstedt has made reference to each other's reports, despite the fact that both investigators published reports concerning pancreatic extracts several years ago. The recent article published by Dragstedt [5] resulted in an interesting exchange of published correspondence.[7] The first communication from Barney Lihn, M.D., Vineland, N. J., criticizes the Dragstedt article for failure to refer to the work of the Wolffe group at Temple University. A second communication from Dragstedt suggests that the Wolffe extract is probably not the same as lipocaic. The third and last correspondent, Asher Yaguda, M.D., Newark, N. J., indicates that Wolffe and his colleagues presented an exhibit before the 1937 meeting of the New Jersey State Medical Society at which they are stated to have shown that, in addition to an epinephrine-neutralizing substance, the pancreas also contains a fat-influencing hormone which they called "lipolysin." They are said to have reported a series of cases showing beneficial effects obtained by the use of these two fractions in combination with insulin in patients suffering with diabetes and atheromatosis. Dr. Yaguda states that he asked Wolffe to prepare a summary, which was published in the *Journal of the New Jersey State Medical Society* in March 1938. Reference to this journal reveals a summary report by Wolffe and Digilio [8] in which no

1. Van Prohaska, John; Dragstedt, L. R., and Harms, H. P.: The Relation of Pancreatic Juice to the Fatty Infiltration and Degeneration of the Liver in the Depancreatized Dog, Am. J. Physiol. **117:** 166 (Sept.) 1936.
2. Dragstedt, L. R.; Van Prohaska, John, and Harms, H. P.: Observations on a Substance in Pancreas (a Fat Metabolizing Hormone) Which Permits Survival and Prevents Liver Changes in Depancreatized Dogs, Am. J. Physiol. **117:** 175 (Sept.) 1936.
3. Clark, D. E.; Vermeulen, C. W.; Donovan, P. B., and Dragstedt, L. R.: Fractionation Studies on Lipocaic, Am. J. Physiol. **126:** 464 (July) 1939.
4. Dragstedt, L. R.; Goodpasture, W. C.; Vermeulen, C. W., and Clark, D. E.: Arteriosclerosis in Depancreatized Dogs, Am. J. Physiol. **126:** 479 (July) 1939.
5. Dragstedt, L. R.: The Present Status of Lipocaic, J. A. M. A. **114:** 29 (Jan. 6) 1940.
6. Wolffe, J. B.: Pancreatic Extract (Enzyme Free) in the Treatment of Diabetic and Arteriosclerotic Gangrene, Am. J. Surg. **43:** 109 (Jan.) 1939.
7. Lipocaic and Pancreatic Extracts, J. A. M. A. **114:** 601 (Feb. 17) 1940.
8. Wolffe, J. B., and Digilio, V. A.: Pancreatic Hormone (Insulin Free) in Cardiovascular Disease, J. M. Soc. New Jersey **35:** 170 (March) 1938.

mention of the fat-influencing hormone is noted. It is simply indicated that pancreatic extract is a promising remedy for the relief of angina pectoris, intermittent claudication, obliterative vascular disease of the extremities and associated symptoms in patients suffering from arteriosclerosis. Whatever evidence may have been presented at the exhibit mentioned, it is not included in the published summary. The report did, however, suggest the modus operandi of the substance to be that of a parasympathetic stimulant, to influence fat metabolism and to improve muscle metabolism. The term "lipolysin" was not mentioned.

Following the publication of the correspondents' controversial comments concerning pancreatic extracts, the Council office received the following communication from Dr. J. B. Wolffe of Temple University, Feb. 28, 1940:

> As a result of work on various fractions obtained from the pancreas we believe that some of our findings may prove of interest to the members of the section of pharmacology. I am particularly referring to Desympatone (epinephrine influencing fraction) and Lipolysin (fat influencing fraction). Dr. Dragstedt of Chicago worked with a preparation which, we believe, is very similar to ours and obtained some very interesting results. We are writing to you at this time because of some comment in the February 17 issue of THE JOURNAL under Correspondence, page 601.

In an effort to obtain some understanding of the difference or similarity between lipocaic (Dragstedt) and lipolysin (Wolffe), the Council office replied by asking Dr. Wolffe to supply a definition of the latter term as used by him. Dr. Wolffe replied March 11, 1940, partly as follows:

> We use the term Lipolysin as one would interpret broadly the combined word of "splitting-fat." A much better term would be one which would suggest influencing fat, rather than splitting; but when we first used the fraction of the pancreas we were impressed with the following two effects and therefore used the term lipolysin:
>
> 1. Reduction of cholesterol and phospholipins in the blood.
> 2. The appearance of a choline or choline-like substance in the urine which gave a positive reaction with Kraut's reagent and after isolation has most of the properties of choline with one exception, and that is that it produces heart block in atropinized animals, while all the other choline preparations such as acetylcholine and mecholyl are pharmacologically inactive following atropinization in certain amounts.
>
> It is quite possible that further researches may prove this term unsuitable.

A further communication from Dr. Wolffe points out that the evidence to suggest the existence of a pancreatic fat-influencing hormone, which is not given in the published summary of his work just noted, was presented on charts at the exhibit mentioned, which explains the conclusion presented in the published summary concerning a possible influence on fat metabolism. According to Dr. Wolffe, these charts included the term "lipolysin" and illustrated the lowering effects of pancreatic extract on phospholipins and cholesterol in patients with angina pectoris and obliterative vascular disease of the extremities. In his communication Dr. Wolffe also calls attention to published summaries[9] of an earlier report made before the fifteenth International Physiological Congress, August 1935, at which time, he states, were shown illustrations indicating the epinephrine-neutralizing and lipid-lowering effects of pancreatic extract. These illustrations accompany his communication, one of which shows the lowering effects of the extract on whole blood lecithin and serum cholesterol in rabbits. The published summaries, however, do not include this evidence or mention the term "lipolysin"; they mention simply that particular attention was called to a "desympatone" epinephrine-neutralizing fraction and that the work suggested the presence of a lecithin-influencing fraction in insulin-free pancreatic extract. Dr. Wolffe further indicates that, while their methods of standardization of the "desympatone" fraction are fairly satisfactory, the "lipolytic" fraction is as yet difficult to standardize and that because of this difficulty they were not only unable to evaluate their own results with this fraction but could not compare results with those reported by Dragstedt and his co-workers.

Reference to the previous reports of Wolffe and his collaborators indicates that their work was primarily concerned with evidence for the vasodilator and epinephrine-neutralizing properties of a pancreatic tissue extract furnished by Sharp and Dohme, Inc., under the proprietary name "Desymptone" and its use in the treatment of "angiospastic symptoms," particularly angina pectoris and intermittent claudication. These reports cite references to the similar work of earlier investigators and to reports indicating that extracts of several other tissues exhibit similar properties. The firm of Sharp and Dohme, Inc., now markets what is claimed to be a more highly purified pancreatic extract, free of the reaction-producing constituents of other tissue extracts, for the treatment of intermittent claudication and for ureteral relaxation and dilatation, under a new proprietary name, "Depropanex." The promotion of a pancreatic tissue extract under the proprietary name "Depropanex" (Desympatone) by Sharp and Dohme, Inc., for use in the treatment of any condition on the basis of such meager evidence is considered unfortunate and is certainly not in the interest of scientific therapeutics.

Whether or not the extract Dragstedt has prepared also possesses the vasodilator and other properties of Wolffe's pancreatic tissue extract is not indicated in the former's status report.[5] Goodpasture et al.[10] and Dragstedt et al.[11] have reported a method of assay for lipocaic, and Munch[12] a method for bio-assay of Wolffe's pancreatic extract. While the method of extraction is somewhat similar, the methods of assay reported for the two extracts are quite different. Whether or not crude insulin-enzyme-free extract of the pancreas represents more than one hormonal substance or simply one in which impurities possessing vasodilator properties of tissue extracts in general are present is not clear. Wolffe's published reports do not contain evidence to prove that the two fractions or hormones mentioned in his communications have been isolated.

Stewart and others (including Dragstedt[13]) have reported the use of lipocaic in the treatment of psoriasis, which disease has been felt to involve some degree of metabolic disturbance. An abstract of a later report by Clark, Walsh, Julian and Dragstedt[14] on the same subject, at the meeting of the Federated Biological Societies at New Orleans, indicates that, of the total of twelve cases of psoriasis treated daily with orally administered pancreatic extract, 50 per cent showed almost complete disappearance of the lesions with lipocaic alone and 25 per cent improved more rapidly than usual when local treatment was supplemented by lipocaic, while 25 per cent failed to show any improvement. In the series treated only 50 per cent had an initial hyperlipemia, and, whereas lipocaic tended to lower the blood lipids in all the cases, those with the highest blood lipids seemed to be the most resistant to treatment. The authors indicate that lipocaic seems to be a valuable adjunct in the treatment of psoriasis. While pointing to the favorable effect of lipocaic in psoriasis, the report can hardly be considered as conclusive evidence of its value in this disease. It is noted that Dragstedt did not include reference to this study in his status report.[5]

At present no commercial preparation of lipocaic is marketed. Further investigation to establish the exact nature and physiologic significance of so-called lipocaic appears to be necessary before its place in the treatment of disease can be accurately evaluated. Whether or not it may prove to be another important factor in the treatment of diabetes mellitus is at present only speculative. The results of future investigations are awaited with great interest. In the meantime the use of pancreatic extracts containing lipocaic must be considered as entirely in the experimental stage.

In view of the experimental status of Lipocaic, the Council postponed consideration to await development of further critical evidence and expressed the view that the preparation should not be recognized for routine practice.

9. Wolffe, J. B.; Munch, J. C.; Rabinowitz, H. M., and Diglio, V. A.: Desympatone—A Fraction of Insulin—Free Pancreatic Extract, Summaries of Communications, State Publishing House for Biol. and Med. Lit., Moscow, Leningrad, 1935, p. 436; also published in Proc. XVth Internat. Physiol. Congress, August 1935, Sechenov J. Physiol. U. S. S. R. **21**: 266 (State Biol. and Med. Press) 1938.

10. Goodpasture, W. C.; Vermeulen, C. W.; Donovan, P. B., and Dragstedt, L. R.: Bromsulphalein Liver Function Test as Method of Assay of Lipocaic, Am. J. Physiol. **124**: 642 (Dec.) 1938.

11. Dragstedt, L. R.; Vermeulen, C.; Goodpasture, W. C.; Donovan, P. B., and Geer, W. A.: Lipocaic and Fatty Infiltration of the Liver in Pancreatic Diabetes, Arch. Int. Med. **64**: 1017 (Nov.) 1939.

12. Munch, J. C.: Pharmacology and Bio-Assay of Insulin-Free Extracts, Rev. Gastroenterol. **6**: 50 (Jan.-Feb.) 1939.

13. Stewart, C. D.; Clark, D. E.; Dragstedt, L. R., and Becker, S. W.: Experimental Use of Lipocaic in the Treatment of Psoriasis: Preliminary Report, J. Invest. Dermat. **2**: 219 (Aug.) 1939.

14. Clark, D. E.; Walsh, Edmund; Julian, O. C., and Dragstedt, L. R.: Experimental Use of Lipocaic in the Treatment of Psoriasis, Am. J. Physiol. **129**: P334 (May) 1940.

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SATURDAY, OCTOBER 26, 1940

CASE POSTPONED INDEFINITELY

According to an announcement issued in Washington on October 17 by United States Attorney Edward M. Curran, Justice James W. Morris, who is presiding in Criminal Court No. 2 of the District Court, disqualified himself from sitting on the case because of his former connection with the Justice Department as assistant attorney general. Justice F. Dickinson Letts, now presiding in Court No. 1, is in the middle of a first degree murder case and has a heavy assignment for the next few weeks. "Since no third criminal court is available at the present time," said United States Attorney Edward M. Curran, "I have taken the case off the assignment and it will be set down for trial in the future on a date agreeable to both the government and the defense."

This postponement will release the officials of the Association, therefore, to a continuation of their work in the headquarters office and in other capacities so essential at the present time.

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

BANTI'S DISEASE OR SYNDROME?

In 1883 Banti described a group of cases characterized by primary enlargement of the spleen, a more or less characteristic secondary hypochromic anemia and a chronic course. The disease passed through typical stages characterized in its advanced stage by hemorrhages from the gastrointestinal tract, ascites and terminal liver cirrhosis. The causative factor was an unknown toxin which acted primarily on the spleen and secondarily on the liver. The essential and distinctive pathologic feature of the spleen was "fibro-adénie" in the malpighian bodies, the process having its inception around the penicillate arteries. This concept received its support from Osler, who defined the new disease entity as follows: "An intoxication of unknown nature characterized by great chronicity. There is a preliminary progressive enlargement of the spleen which cannot be correlated with any known cause, anemia of secondary type with leukopenia, a marked tendency to hemorrhage from the lower esophagus, and a terminal state with cirrhosis of the liver."

The idiopathic nature of Banti's disease soon came into question. Numerous observations appeared demonstrating that splenomegaly and secondary anemia were associated with thrombosis of the splenic or the portal vein. Cauchois [1] collected reports of a number of cases, including his own, of splenomegaly and anemia of pylethrombotic origin. He emphatically refuted Banti's concept. Warthin [2] concluded on the basis of several observations that "every factor of the symptom complex that Osler lays down as the criterion for splenic anemia is also a factor in the complex of portal sclerosis and thrombosis." Eppinger in his classic treatise on hepatolienal diseases devotes a chapter to the relationship between portal congestion and splenomegaly. Klemperer [3] reported a case of cavernomatous transformation of the portal vein presenting clinical and pathologic characteristics corresponding in all respects to that of Banti's. Larrabee,[4] on the basis of a study of forty-seven cases, concluded that in the majority of cases presenting the clinical picture of Banti's disease the condition is dependent on some intra-abdominal lesion obstructing the venous outflow of the spleen. The commonest of these was liver cirrhosis. He states that "we are forced to the conclusion that most if not all of these cases were not only associated with lesions interfering with the outflow of blood from the spleen but were actually the results of such lesions." Larrabee suggested that the syndrome be referred to as chronic congestive splenomegaly. Johnston,[5] in his

1. Cauchois, H.: Splénomégalie chronique d'origine pylethrombosique, Thèse de Paris, Paris, Steinheil, 1908.

2. Warthin, H. S.: The Relation of Thrombophlebitis of the Portal and Splenic Vein to Splenic Anemia and Banti's Disease, Internat. Clin. **4**: 189, 1910.

3. Klemperer, Paul: Cavernomatous Transformation of the Portal Vein, Arch. Path. **6**: 353 (Sept.) 1928.

4. Larrabee, R. C.: Chronic Congestive Splenomegaly and Its Relation to Banti's Disease, Am. J. M. Sc. **188**: 745 (Dec.) 1934.

5. Johnston, J. M.: The Relation of Changes in the Portal Circulation to Splenomegaly of Banti's type, Ann. Int. Med. **4**: 772 (Jan.) 1931.

study on the relative size of the hepatic portal radicles in splenic anemia and Banti's disease, concluded "We are dealing here with mechanical alterations of the portal blood flow interfering with the free exit of blood from the spleen."

Interesting contributions have recently come from the Combined Spleen Clinic at the Presbyterian Hospital, New York. Rousselot [6] calls attention to the fact that the appearance of the portal circulation in the course of a splenectomy for Banti's disease is at once indicative of portal hypertension. This dilated and tortuous collection of veins in the splenic pedicle and the enormously dilated veins of the large collateral circulation in the adhesions surrounding the spleen make the removal of the spleen in these cases a formidable and hazardous procedure. This local vascular condition, Rousselot points out, was present regardless of the nature of the "obstructive factor." Microscopic examination of the removed spleens revealed the essential similiarity of the changes in the various cases. Thompson [7] of the same clinic sums up the experience of the clinic comprising 137 cases observed in the past ten years. Of this group 100 cases had been followed under nearly ideal circumstances for clinical investigation. Splenectomies were done in sixty-eight cases. The cases were those of splenomegaly with anemia, leukopenia and thrombocytopenia, development of increased collateral circulation between the portal and peripheral venous circulation and microscopic changes in the spleen that are characteristic. The result of this study is a refutation of Banti's concept. Thompson states "It is our current concept that Banti's disease or splenic anemia is the result of mechanical obstruction to the flow of blood within the portal system. With high portal pressure and relatively low peripheral pressure a reversal in the direction of normal blood flow can take place. This reversal is aided by the absence of valves in the portal system. A careful study of our clinical material leads to the conclusion that there are no significant differences clinically or hematologically between the congestive splenomegalies resulting from the various obstructive factors."

The histologic characteristics of the removed spleens were the same in all groups. All presented variable degrees of follicular atrophy, of fibrosis of the pulp with dilated venous sinuses, and all had the characteristic perifollicular hemorrhages. The obstructive lesions are either intrahepatic or extrahepatic. The intrahepatic lesion is cirrhosis; indeed, hepatic cirrhosis was the obstructive factor in 68 per cent of the cases. Rousselot and Thompson injected silica particles into the splenic veins of dogs and produced after two years a congestive splenomegaly with extensive collateral circulation. Thompson emphasizes that absence of cirrhosis as the obstructive agent at the time of splenectomy means that it will not appear subsequently. Thus he says "We have yet to see a patient develop the sequence of events characterized by Banti as the three stages of the syndrome."

Thompson and his associates [8] have made observations on the splenic vein pressure in fifteen cases in the course of operation by inserting the needle of the venous pressure apparatus into the splenic vein. The relatively great increase in splenic pressure in cases of Banti's syndrome when compared with the venous pressure simultaneously recorded in the arm suggests that portal hypertension is an important factor in the production of the chronic splenomegaly.

The contention of the workers of the Combined Spleen Clinic is that Banti's disease or splenic anemia is a secondary mechanical manifestation of any of a variety of lesions producing chronic splenic vein hypertension. They therefore suggest that the terms Banti's disease and splenic anemia be replaced by congestive splenomegaly, as originally suggested by Larrabee.

The type of liver cirrhosis in prolonged schistosomiasis results in the greatest increase in portal pressure and the largest spleens. The behavior of this parasitic disease is ideal for the production of portal hypertension. Campbell,[9] on the basis of his extensive experience with schistosomiasis in the Orient, expresses the belief that most of the so-called Banti's disease of the Orient is actually schistosomiasis. He considers it probable that the disease as originally described by Banti might be schistosomiasis because of the proximity of Italy to Egypt, where the "Egyptian splenomegaly" has come to be recognized as schistosomial in origin.

6. Rousselot, L. M.: The Role of Congestion (Portal Hypertension) in So-Called Banti's Syndrome, J. A. M. A. **107**: 1788 (Nov. 28) 1936.
7. Thompson, W. P.: The Pathogenesis of Banti's Disease, Ann. Int. Med. **14**: 255 (Aug.) 1940.
8. Thompson, W. P.; Caughey, J. L.; Whipple, A. O., and Rousselot, L. M.: Splenic Vein Pressure in Congestive Splenomegaly (Banti's Disease), J. Clin. Investigation **16**: 571 (July) 1937.
9. Campbell, H. E.: Schistosomiasis and Banti's Disease: An Inquiry into Their Possible Relationship, Chinese M. J. **53**: 459 (May) 1938.

THE CLEVELAND MUSEUM OF HEALTH

Effective presentation of health exhibits has been achieved in only a few places, notably at recent world's fairs. Chicago's Century of Progress, the New York World's Fair and the Golden Gate International Exposition, as well as fairs held at Dallas, San Diego and the Great Lakes Exposition at Cleveland, contained health exhibits of notable attractiveness. At all these fairs, exhibits by the American Medical Association were prominent in the display.

The health museum idea is not an innovation. Quacks have used adaptations of it for centuries. Permanent health exhibits have been established from time to time in connection with several leading general museums. Small exhibits have been held in many localities by numerous health agencies. As long ago as 1920, efforts were made on a small scale to establish a health museum in the Harlem district in New York. The Dresden

Museum of Hygiene in Germany and the Wunder des Lebens Exposition in Berlin were extensively developed in the decade between 1925 and 1935. Out of the New York World's Fair will grow a permanent health exhibit known as the American Museum of Health. Out of the Chicago Century of Progress and other sources grew the health exhibits at the Rosenwald Museum of Science and Industry in Chicago.

The principles and purposes of health museums have been endorsed by the American Medical Association through participation in the important world or regional expositions as well as through assistance rendered local exhibitors by the Association's Bureau of Exhibits in state and local fairs and temporary health museums. On June 11 the House of Delegates of the American Medical Association adopted a resolution with reference to the American Museum of Health, which states:

Resolved, That the American Medical Association at its ninety-first annual session, held in New York, approves of this museum, urges its constituent and component societies to support and promote the development of similar museums in other parts of the United States and instructs its Board of Trustees, officers and employees to give all possible support to such museums wherever they may be developed in the United States in conjunction with local medical organizations.

The opening of a Health Museum in Cleveland with support from individuals and from civic bodies, among which the Cleveland Academy of Medicine is a leader, is a development directly in accord with the resolution passed by the House of Delegates. Cleveland has long been known as one of America's progressive cities. The addition of a Museum of Health, the first independent institution of its kind actually to be opened in the United States, to existing educational and cultural facilities in Cleveland is a logical step. In time it may well be emulated by many of the larger cities in the United States. Under medical and civic leadership and the technical direction of a physician experienced in exhibit technic, the institution should be a success and should contribute to the health and welfare of the people of Cleveland.

Physicians from Cleveland, the state of Ohio and elsewhere will participate in the formal opening of the Museum, which is to take place November 11 and 12.

During the past decade permanent health exhibits have been established in several museums over the country, especially the Toledo Museum of Science, the Buffalo Museum of Science and the New York Museum of Science and Industry. The most comprehensive group of health exhibits yet to be shown will be opened to the public this month at the Museum of Science and Industry in Chicago.

That the medical sciences should take their place alongside the other sciences that ease the path of man on this earth is perfectly proper. The visitor, coming as he does with an open and receptive mind, is able to obtain a proper perspective of the place that medicine takes in his life.

Current Comment

GUY'S HOSPITAL REPORTS PRESENTS SIR ARTHUR F. HURST NUMBER

The fourth part of the 1939 volume of *Guy's Hospital Reports* is dedicated to Sir Arthur F. Hurst on the occasion of his retirement from editorship. A steady contributor since 1906, Hurst became editor of the *Reports* in 1921. He had contributed to the *Reports* seventy-eight articles, sixty-four of these during his editorship of the *Reports* from 1921 to 1939. The testimonial number contains a complete list of the articles contributed by him to the *Reports* as well as a list of articles contributed by his associates. Fourteen of the more important papers of Sir Arthur have been selected to be reprinted in this issue. They reflect eloquently the breadth of the clinical and scientific interests of the author. The articles deal with the function and the diseases of the esophagus, stomach and intestine, Addison's anemia, asthma and disorders of the nervous system. The volume is a fitting testimonial to Sir Arthur's wide interests and indefatigable energy.

AUTOMOBILE AND MEDICAL EXPENDITURES IN FAMILY BUDGETS

Recent studies by the United States Bureau of Labor Statistics indicate that the much exploited difficulties in the payment for medical care are due more to the increase of expenditures for other items in the family budget than for medical care itself. The Bureau of Labor Statistics has recently set up a new basis for the index figures on costs and standards of living.[1] This required a detailed analysis of all recent budget studies. This analysis broke down the various items in the budget into such classes as food, clothing, fuel, house furnishings and miscellaneous. In this "miscellaneous" item the greatest change in expenditures was found. The periods compared are 1917-1919 with 1934-1939. Expenditures for food and clothing made up a smaller percentage of the family budget in the later period, while the expenditure under "miscellaneous" increased from 17 per cent of the total budget in 1917-1919 to 26.8 per cent in 1924-1936. The new index will be based on 1935-1939 and, when allowances are made for changes in the value of money and the exclusion of certain items which were previously counted as "savings," the percentage of expenditures for "miscellaneous" in the average budget is raised from 23.7 for 1923-1925 to 26.9 in 1935-1939. When this "miscellaneous" item is analyzed, expenditures for automobiles are found to have been practically negligible from 1917 to 1919, but now "in combination automobile purchases and operation constitute almost one fifth of the new miscellaneous index." At the same time the "weight for medical care is less by one half." During the last twenty years the purchase and care of automobiles seem to have had greater appeal than the desire for additional medical service. No doubt improved health has also lessened somewhat the need for more medical service.

1. The Bureau of Labor Statistics' New Index of Cost of Living, Monthly Labor Review **51**: 367 (Aug.) 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

COOPERATION OF HEALTH AGENCIES WITH ARMY AUTHORITIES

In Mobilization of a National Guard Regiment

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and
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Concord, N. H.

At the time of the induction into federal service of one of New Hampshire's National Guard regiments on September 16 the New Hampshire State Board of Health, cooperating with the New Hampshire Tuberculosis Association, the Adjutant General of the state of New Hampshire and the federal military authorities, carried out field laboratory services in the form of chest x-ray examinations, serologic tests of the blood and urinalyses on a total of 1,552 officers and enlisted men. The work had to be completed in nine working days as the regiment was leaving the state on September 26. It was done without delaying or interfering in any way with the army's regular physical examinations, which were done concurrently by the army surgeons.

The facilities provided by the army consisted of a small building formerly used as a cook shack, equipped with electricity, running water and waste drainage. The New Hampshire Tuberculosis Association furnished personnel to take medical histories and technicians for doing the x-ray work. The x-ray unit was under the personal direction of Dr. Robert B. Kerr, executive secretary and clinician of the New Hampshire Tuberculosis Association. The state board of health set up a urinalysis laboratory on the premises and organized a unit for taking specimens of blood for serologic tests and provided a portable x-ray apparatus. The serologic tests were done in the regular laboratory of the state board of health. The workers from the health agencies were assisted by five privates from the medical detachment who were used to direct the flow of men, wash bottles and keep the premises in order.

The personnel of the regiment first underwent their regular army physical examination. Immediately following his physical examination each man proceeded to the laboratory unit. A latrine was built near the shack and as each man reported he was given a urine specimen bottle and asked to void. He entered the laboratory bottle in hand. A card was filled out with his name and short family, medical and occupational history. Army serial numbers not having been assigned, each card had previously been numbered consecutively. Having the cards machine numbered prevented the possibility of duplication or of skipping a number. The number on the card was placed on the urine specimen, the blood tube and the x-ray film. Each man held his own card. The cards were collected as the men went out by another door.

Urine specimens were tested for specific gravity, albumin and sugar. The nitric acid technic was employed in testing for albumin. A microscopic examination of the centrifuged sediment was done on every specimen showing albumin, followed by examination of a check specimen. Benedict's solution was used for sugar tests. Specimens giving a positive reaction to the qualitative tests were tested quantitatively, followed by examination of a check specimen.

The blood specimens were examined by the Hinton flocculation test. In each instance of a positive reaction a second specimen was taken. This was tested by the Kahn, Kline, Hinton and Eagle technics.

With these facilities and personnel it was found possible to examine 400 men during a nine hour working day. The men could be roentgenographed at the rate of sixty an hour for one or two hours at a time. Rest periods of twenty minutes had to be provided at these intervals, as the personnel could not keep up such a rate for long periods.

To prevent overheating of the x-ray tube, two [1] tube heads were used. After every thirty to forty films the tube heads were changed, so that while one head was in use the other was cooling. It took about three minutes to change heads. The refrigeration room of the cook shack provided an excellent dark room and two workers were kept busy changing casettes. Six casettes were used.

The chest x-ray films were taken with a standard [2] portable unit at a distance of 36 inches at 15 milliamperes and 80 kilovolt peak. Films were unloaded from the casettes, repacked in the one-half gross cartons in which they came and sent to three local hospitals for developing. If the developed film suggested cardiovascular disease, the individual was taken to the office of a local roentgenologist for fluoroscopic study and 72 inch films.

Blood from nine men was found positive. All were checked. In each case the second blood specimen was also found positive. A trace of albumin was found in the urine in twenty-six cases and a moderate amount in two cases. In one of these the microscopic examination revealed large numbers of hyaline and granular casts. Ninety-two men showed traces of sugar in the urine. On reexamination eleven still had sugar, the largest amount being 0.8 per cent. The question of emotional glycosuria is brought up. Time did not permit continued study to determine whether the glycosuria persisted.

The chest x-ray films revealed seven cases of parenchymal tuberculosis, all minimal. One film revealed a mediastinal tumor, diagnosed as either Hodgkins' disease or lymphosarcoma. Two cases were recommended for further study. In one, a baker, there was a question of yeast infection at the base of one lung, and the other showed a small area of rarefaction in the hilus. In eight cases the 36 inch films were complemented by fluoroscopic study and 72 inch films. One of these was diagnosed as having widening of the arch of the aorta and another as myocardial weakness and dilatation.

From the New Hampshire State Board of Health.
Read at the annual conference of the New Hampshire Tuberculosis Association, Manchester, N. H., Oct. 3, 1940.

1. Second tube head lent by Picker X-Ray Corporation.
2. Waite portable unit.

The cost of this project to the state board of health and the New Hampshire Tuberculosis Association for the special supplies and personal services and the small amount of additional equipment required was $1,870.35. To this may be added the less obvious cost of salaries of regular personnel of the health department and tuberculosis association utilized in the project, amounting to $724, and depreciation in value of the x-ray unit estimated at $200. The total of $2,794.35 thus derived amounts to $1.80 per man. We feel that the results have justified this expenditure. In connection with the Detroit tuberculosis case finding program, Dr. Henry Vaughan [3] has estimated that the finding of a case of tuberculosis in the minimal stage of the disease is a saving to the community of a thousand dollars. On that basis alone this project recommends itself as an economical and efficient case finding procedure.

All results were turned over to the army surgeons for their use. We might note that none of the men were discharged because of positive serologic reactions. Treatment was instituted by the army surgeons after evaluation of each case. The men with tuberculosis were discharged to the care of the New Hampshire Tuberculosis Association. With a tour of active military service facing them it was quite important to these men that their cases of minimal tuberculosis be detected and that they be spared the exertions of the coming year. It was equally important to the army that these men should not remain to serve as foci of infection to the men quartered with them.

The work on the regiment of 1,400 men was completed within five days. The laboratory stayed open the remaining four days of the encampment as recruits were being enlisted and all candidates for enlistment were examined. A total of 1,552 men went through the laboratory.

It is planned to continue with this program and to have the New Hampshire State Board of Health and the New Hampshire Tuberculosis Association perform the same service for New Hampshire's other National Guard regiment when it is called into federal service.

In times of national emergency, army authorities should not have to provide facilities duplicating those already present in health organizations. Many health departments and nonofficial health agencies have facilities such as laboratories and x-ray equipment which can render a valuable service to the army at the present time. Their facilities should be offered and utilized.

COMMITTEE TO CONSERVE MANPOWER IN THE DEFENSE INDUSTRIES

A National Committee for the Conservation of Manpower in Defense Industries has been organized to execute a new plan of coordinating accident prevention efforts throughout the country. The membership includes safety experts from private industry, executives from the national and local safety councils, labor representatives and state officials. Appointed as special agents of the U. S. Department of Labor, the twenty-four members of the committee are serving entirely on a voluntary basis. The new plan to safeguard the productive manpower of the nation in the emergency defense program was announced by the Department of Labor following a recent meeting of various interested groups. It aims to bring to industries operating on government contracts, particularly the smaller industrial units, the experience of the country's largest and best managed industries in accident control. According to *National Safety News*, the plan recognizes the basic necessity of state and local health regulations but emphasizes the need for safety education, training and stimulation extending beyond the scope of laws, rules and codes. The program will be carried out with the assistance of regional representatives and district and local contact men. The contact man assigned will volunteer to assist the management of the industrial plant in organizing a safety program and to make an appraisal of physical hazards and submit information on their correction. He will act as a continuous adviser to the management for the duration of the contract and beyond, if desired by the management.

The division of labor standards, U. S. Department of Labor, is acting as the clearing house for all activities in connection with the plan. The technical staff of the division's safety and health section is responsible for the preparation, under the direction of the national committee, of procedures, forms, and promotional, educational and technical material. The safety and health section will keep records of accident experience in the defense industries and report its conclusions to the national committee.

3. Statement made by Dr. Henry Vaughan in a lecture given at the Harvard School of Public Health, Nov. 25, 1938.

RECOMMENDATIONS OF PHILADELPHIA COUNTY SOCIETY

The board of directors of the Philadelphia County Medical Society, September 18, approved two sets of recommendations dealing with the military establishment in its relation to medical practice. The board suggested that every hospital classify its staff under three categories: (*a*) those who can be most easily spared for military service, (*b*) those who can be spared in the event of a military emergency and (*c*) those who cannot be spared under any circumstances. It was suggested that a committee be appointed by the president of the society, including representatives of the Philadelphia Health Council, the board of health and the council of social agencies, to see that medical needs in each section of the city are fulfilled. It was recommended that fees for medical service be adjusted for families whose income has been reduced by conscription or enlistment of the major wage earner.

To protect physicians who serve in the armed forces, the board presented a plan for arrangements with physicians who take over the practice of those in service. First, it was recommended that the physician leaving his practice send cards to his patients stating who is to be in charge of his practice and register the arrangement with the county medical society. The locum tenens should agree to place all funds collected from patients thus turned over to him in a separate fund, to deduct the amount necessary to cover overhead and divide the remaining funds 50-50, and when the practitioner returns from military service to refer all his patients back to him.

The board urged that all institutional, teaching and industrial appointments held by the practitioner be made available to him without loss of rights, seniority or privileges when he returns from service. Those serving in such positions during the emergency should feel that acceptance of them is purely on a temporary basis, the board pointed out.

The board recommended that, during the period of military service of any member of the society, the portion of the annual dues now retained by the society be remitted.

ORGANIZATION SECTION

HOSPITALIZATION OF NEGRO PATIENTS

A REPORT FROM THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

During hearings on the Wagner-George hospital construction bill the problems of the hospitalization of Negroes were discussed by a group of persons experienced in hospital administration, which met at the invitation of the Surgeon General of the United States Public Health Service.

It was generally agreed that added and better hospital facilities were needed by the Negroes of the South. It was further agreed that the interests of the colored race would be best served by making provision for them in institutions designed to serve the entire population rather than by the establishment of separate hospitals caring for Negroes only.

Summary of Reports from 111 Negro Hospitals for the Year 1939

	Number	Beds	Admissions	Average Daily Census
General	88	6,413	105,047	3,990
Nervous and mental	6	9,884	2,783	9,764
Tuberculosis	13	1,317	1,365	1,005
Maternity	1	50	80	33
Hospital departments of institutions	3	85	881	24
Total	111	17,749	110,156	14,816

In most sections of the country existing hospitals of all types and under all auspices admit patients without regard to race or color. Many of them make no separate record of Negro patients, so that a complete census of those patients has been impossible.

However, in the Annual Census of Hospitals for 1932, in response to a question as to whether the hospital admits Negroes, 3,010 other than Negro hospitals and not including any mental hospitals reported in the affirmative. These included 2,442 general hospitals and 568 special hospitals. No census of Negro patients in these hospitals was possible.

From 111 Negro hospitals—those which are limited to Negroes or have separate buildings for that race—returns showed a total of 17,749 beds, admitting 110,156 patients. Further figures on the occupancy of Negro hospitals are given in the accompanying table. The Negro general hospitals, numbering eighty-eight, with 6,413 beds, had an average occupancy of 3,990 patients; in other words, the Negro general hospitals had an occupancy rate of 62.2 per cent. In all other general hospitals the average occupancy rate was 69.3 per cent. In the Negro general hospitals there were 16.4 admissions per bed—that is, each bed served 16.4 persons during the year on an average. In all other general hospitals the number of patients admitted was 20.3 per bed. This substantiates, in a general way, what has often been observed in particular instances—that Negroes do not utilize existing Negro hospitals to the same extent that the general population utilizes existing hospitals. Contrast is more striking yet on observation that the rate of occupancy for Negro patients in large Negro hospitals provided by municipalities and nonprofit organizations on a charity basis runs as follows:

Homer G. Phillips Hospital, St. Louis, 78.0 per cent occupancy.

Kansas City General Hospital No. 2, 70.8 per cent occupancy.

Freedmens' Hospital, Washington, D. C., 79.5 per cent occupancy.

Negro Hospital, Galveston, Texas, 89.7 per cent occupancy.

Grady Hospital, Atlanta, Ga., 77.7 per cent occupancy.

These hospitals were, of course, included in the eighty-eight Negro general hospitals referred to.

In 1938 a special survey of hospital facilities in the state of Mississippi was reported in THE JOURNAL June 3, 1939, page 2317.

Each locality has its own peculiar conditions which are to be understood and met in providing hospital facilities for its population. Careful study and consideration in the interests of the whole population in each community should be the basis of action. Due account should be taken of existing facilities.

WESTERN NEW YORK MEDICAL PLAN, INC.

GEORGE R. CRITCHLOW, M.D.
Medical Director
BUFFALO

The Western New York Medical Plan, Inc., was organized late in 1939 after a two year study of the subject of medical expense indemnity by a committee representing the eight counties of western New York: Alleghany, Cattaraugus, Chautauqua, Erie, Genesee, Niagara, Orleans and Wyoming. On enactment of the Piper-Hampton bill into law, providing for the incorporation of nonprofit voluntary medical expense indemnity plans, the committee applied for and received the first certificate of incorporation under the new law. License to operate was issued in February 1940, the plan was offered to the public March 1, and the first contracts became effective March 15. The plan operates under the supervision of the New York State Department of Insurance after having received the endorsement of the State Department of Social Welfare.

ORGANIZATION

It is a nonprofit corporation. The board of trustees, elected by the participating physician members, consists of twenty-five members—sixteen physicians and nine laymen—made up as follows:

Six physicians engaged in active private practice in Erie County.

One physician from each of the other seven counties included in the plan.

Three physicians nominated by the Eighth District Branch of the Medical Society of the State of New York.

Four persons, not physicians, residents of Erie County.

Four persons, not physicians, from the other counties in the area.

One person, not a physician, a resident of the area, nominated by the Eighth District Branch of the Medical Society of the State of New York.

There are five standing committees for administration:

1. Executive: Seven members, five of whom must be physicians. This committee manages the corporation under the general control of the board of trustees.
2. Financial: Five members of the board of trustees.
3. Medical Advisory: Eleven members, all physicians, who consider matters referred to them relating to inclusion or exclusion of specific medical and surgical services.
4. Reference and Appeals: Twenty members, all physicians, representing all participating counties, to whom may be referred disputed questions of claims for services.
5. Coding: Five physicians from Erie County, one from each other county, whose duty it is to determine professional qualifications of participating physicians based on statements made in their application for membership. Arbitration boards are provided for, one to be set up in each individual controversy, the conclusions of which are binding on the members involved according to an agreement in their contract.

SUBSCRIBERS' ELIGIBILITY

Any person under 65 years of age who has not had cancer, diabetes, osteomyelitis, chronic nephritis, tuberculosis or coronary thrombosis is eligible for membership. Subscribers reaching the age of 65 may continue membership at the discretion of the corporation. Married women must include their husbands in the contract.

Two types of contract are provided:

1. Medical and Surgical Contract: This provides service for all kinds of medical and surgical conditions, but obstetrics and elective operations are not covered in the first year of the contract.
2. Surgical Contract: The benefits of this contract are limited to surgical cases only plus obstetrics (after first year) and an annual physical examination at the request of the subscriber. There is no limit to total benefits.

There are two classes of members:

1. Those whose annual income is less than a specified amount, as follows: (*a*) Individuals with $1,800 or less; (*b*) man and wife with combined income of $2,500 or less; (*c*) subscriber and family, including all unmarried children under 18 years of age, with combined income of $3,000 or less.

Subscribers in this class receive service without further expense (except for co-insurance provision noted later) up to the limit of benefits under the contract, which are as follows: (*a*) individual, $200 of service a year; (*b*) man and wife, $300 of service a year; (*c*) family, $400 of service a year.

2. Those whose annual income exceeds the amounts that have been noted. For this class of subscribers the contract becomes one of pure indemnity according to a definite schedule of indemnities attached to and made a part of the contract. This class of subscribers is subject to the same limitation of total benefits as is the lower income class, but only on the type 1 contract (medical and surgical). Neither class of subscriber is limited as to total benefits under type 2 contract (surgical).

The subscriber may choose his physician from the list of participating physician members. About 75 per cent of the eligible doctors in the area are members.

Emergency treatment by other than member physicians is paid for, but only one half of the amount that would be paid a participating physician.

Obstetric service is furnished only after the first year of the contract.

The general medical and surgical contract includes house and office calls, hospital calls, consultations, specialists' fees, operations, anesthesia, x-rays, physical therapy, immunization, and laboratory and pathologic examinations (when not furnished subscriber under a separate hospital service contract).

An individual subscriber must pay the physician one half of the first $10 for service in any contract year (total $5) on house and office calls for medical (nonsurgical) service. Man and wife and family subscribers must pay half of the first $20 for service in any contract year (total of $10). This provision is designed to discourage consulting the doctor for trifling and unnecessary reasons.

MEDICAL SERVICES NOT INCLUDED IN THE PLAN

The medical services not included in the plan are:

1. Cases covered by workmen's compensation insurance.
2. Elective operations during the first year of the contract. These are defined as operations which are not imperative but may be desirable.
3. Services rendered in the treatment of venereal diseases acquired as venereal infections, in the first eleven months of the contract.
4. Any ailment or condition arising from the use of drugs or alcohol.
5. All functional nervous or mental diseases in excess of $50 expense.
6. Injuries or diseases contracted to which a contributing cause was the subscriber's commission of or attempt to commit a felony, or which occurs while the subscriber in engaged in an illegal occupation.
7. Intentional self-inflicted injuries.
8. Services rendered for a condition known to the subscriber to exist at the time the contract became effective.
9. Congenital defects, except in the newborn on a family contract.

SUBSCRIBERS' DUES

The amounts of subscribers' dues are given in the accompanying table.

Subscribers' Dues

Medical and Surgical Contract	Monthly	Quarterly	Semiannual	Annual
Subscriber only, no obstetrics..	$1.50	$4.50	$ 9.00	$18.00
Man and wife, no obstetrics...	2.25	6.75	13.50	27.00
Family group, with obstetrics..	3.00	9.00	18.00	36.00
Surgical Contract				
Subscriber only, no obstetrics..	0.40	1.20	2.40	4.80
Man and wife, no obstetrics...	1.10	3.30	6.60	13.20
Family group, with obstetrics..	1.70	5.10	10.20	20.40

MEDICAL PARTICIPATION

All duly licensed physicians in the district may become members on written application, by payment of the registration fee and signing a contract. Physicians must give written notice of intention to cancel their membership contract, but such termination of membership will not become effective until thirteen months after date of notification.

Physicians who enrolled before April 1, 1940, paid $10 as a registration fee, which is returnable as corporation funds are available. All membership fees paid after this date are not to be refunded.

Participating physicians render service regardless of the corporation's ability to pay. All remuneration for their services is on a unit basis. Seventy per cent of the premium income the first year and 75 per cent each year thereafter is set aside for the payment of doctors' bills. Payments are made quarterly, and when the value of the unit is below par for the quarter the balance becomes a contingent liability to be paid as earnings accumulate.

Service is evaluated on the basis of an established fee schedule, most of the items of which are below the pre-

vailing schedule for private patients. Where services are rendered subscribers in the higher income group (class 2) the doctor is paid the amount stated in the contract as indemnity and may charge the subscriber an additional fee by private arrangement. The amount of indemnity due the subscriber under his contract is paid direct to the doctor, and the subscriber agrees in his contract to accept the doctor's receipted bill as satisfaction of the corporation's obligation under his contract.

When a subscriber is treated for emergency illness by a nonparticipating physician, whether within or without the area, the corporation indemnifies the subscriber to the extent of one half the amount it would have paid a participating physician for the same service. The subscriber is obligated to the nonparticipating physician for his entire bill.

EXPERIENCE FOR FIRST SIX MONTHS

The first contracts became effective March 15, 1940, and all were of the complete medical and surgical type. The surgical contract (type 2) is being offered the public on Oct. 1, 1940.

The public's reaction to the plan in this first six months may be termed twofold: First, some prospects complained that the rates were too high. Second, employers objected to the discrimination against men with incomes over the limits set by the plan. They felt that it was bad for industrial relations. The field force found that enrolment was slowed up because in many instances executives and foremen lost interest and failed to push enrolment when they found that they themselves were excluded because of the income ceiling.

The corporation is trying to meet the first reaction, namely the high cost, by offering another type of contract, the surgical, at considerably lower cost. To meet the second objection, the income limit, the plan will henceforth include those above the income limits set in the original plan. However, for this class of subscriber the contract will be one of straight indemnity rather than service, and a fixed amount of indemnity according to an attached schedule will be paid. When subscribers in this class apply for service under their contract the physician has the privilege of fixing his own fee for the service and may collect from the subscriber that agreed fee less the amount of indemnity payable to the subscriber under the schedule of his contract.

Of claims approved during the first quarter of operation the unit value of remuneration was par. The second quarter ended Oct. 1, 1940, at which time doctor bills will be paid on a unit value of better than 90 per cent. The corporation fully expects greatly increased premium income under the modified plan about to be inaugurated. About 750 doctors are members and something less thon 1,000 members are enrolled. About 140 claims have been authorized, over half of which have been medical. Rejections have been few, mostly for preexistent conditions and for elective operations.

The State Insurance Department has recently made its first official examination of the corporation's condition and has reported satisfaction in its observations, considering the unexplored field in which the corporation is operating.

MEDICAL ECONOMIC ABSTRACTS

MICHIGAN MEDICAL SERVICE

After ten years of study and an expenditure of $30,000 in surveys, the Michigan State Medical Society at a special meeting in January 1939 sponsored the formation and operation of a medical service plan.

On the basis of an enabling act (Michigan Public Act 108 of 1939) the Council of the Michigan State Medical Society proceeded to develop the nonprofit corporate structure of the Michigan Medical Service. This involved the advancement of $7,800 in organizational expenses plus $10,000 working capital.

Some of the more important phases of the plan are as follows:

First, membership consists of the members of the house of delegates of the Michigan State Medical Society, which elects a board of directors of thirty-five members, two thirds of whom must be doctors of medicine and the remainder representing various lay groups. No member of the board of directors receives compensation for his services as a director.

Second, district medical advisory boards have been established in each of the councilor districts of the Michigan State Medical Society. Members are selected by the county medical societies on the basis of one board member for each hundred doctors of medicine or major fraction thereof in the county medical society. To these boards are referred all problems involving the rendering of medical services and the approval of payment for services.

Third, the Michigan Medical Service was organized on a statewide basis on the recommendation of the Insurance Department of Michigan. Such statewide administration would result in lower administration costs, uniform subscription rates, and greater financial stability through centralization of reserves.

TWO PLANS OFFERED

Both a Medical Service Plan and a Surgical Benefit Plan are offered. The Medical Service Plan provides the services of physicians in the home, office and hospital. The first $5 incurred for medical services in any one subscription year must be paid by the subscriber, and total benefits in one year are limited to $325 for an individual, $550 for a husband and wife, and $875 for a family. This service costs $2 a month for the individual, $3.50 for a husband and wife and $4.50 for the entire family including all children under 19 years of age.

The Surgical Benefit Plan provides the following benefits only while the subscriber is a bed patient in a hospital: surgical, diagnostic x-ray and maternity services after twelve consecutive months in the plan. The monthly rate for these services is 40 cents for an individual, $1.20 for a husband and wife and $2 for a family including all children under 19 years of age. These rates are increased somewhat if the proportion of female subscribers in any group exceeds 5 per cent. At least 50 per cent of a group of eligible employees must become subscribers, with a minimum of twenty-five. The Surgical Benefit Plan has no age limit, but an age limit of 65 is fixed for the Medical Service Plan.

ENROLMENT

Since the first subscribers were enrolled in March 1940, membership in Michigan Medical Service has increased to 67,449 participants, as of August 29. The total number of subscribers and the enrolment in each plan is shown in table 1.

A steady increase in enrolment of an average of 1,200 new subscribers each month has been obtained during the summer months. The increasing recognition being given to Michigan Medical Service and the presentation during the fall months, when employees are back from vacations, should make possible a greater monthly enrolment.

Of the forty-six groups of subscribers, including employees of organizations such as the Ford Motor Company, the Michigan State Highway Department, People's Outfitting Company, the Booth Newspapers, the Michigan State Unemployment Compensation Commission, the United Detroit Theaters and the Cavin Lumber Yards, six groups elected the Medical Service Plan and forty the Surgical Benefit Plan.

In several of the groups the subscribers are fairly well distributed throughout the state and doctors in practically every county may have patients who are subscribers.

About one fourth of the subscribers are enrolled under individual certificates, one fourth under husband and wife certificates and one half under family certificates (not including the large enrolment of individual subscribers in the Ford Motor Company group).

SERVICES TO PATIENTS

During the first six months, services were provided for more than 3,000 subscribers, and payments to doctors for these services will be in excess of $125,000.

A sample study of 1,301 patients who received services under the Surgical Benefit Certificate indicates that 23.8 per cent received services for abdominal surgical procedures (6 per cent for hernias, 15.3 per cent for appendectomies, 1.2 per cent for cholecystectomies, 1.3 per cent for all other abdominal procedures); 25.1 per cent for nose and throat surgical procedures (18.3 per cent for tonsillectomies, 4.7 per cent for submucous resections, 2.1 per cent for all other nose and throat surgical procedures); 29.2 per cent for radiology services (10 per cent for chest x-ray films, 5.5 per cent for gastrointestinal series x-ray films, 13.7 per cent for all other radiology services), and 21.9 per cent for all other surgical procedures.

The foregoing study is for the primary surgical services rendered. Frequently the patient required two or more operations at the same time.

A sample study of 357 patients under the Medical Service Certificate indicates that 70.5 per cent required office or home visits of general examinations (48.7 per cent office visits, 10 per cent home visits, 9.5 per cent general physical examinations and 2.3 per cent all other visits and examinations); 9.5 per cent required eye, ear, nose and throat services (5.04 per cent tonsillectomies, 3.36 per cent refractions, 1.12 per cent all other eye, ear, nose and throat procedures); 8 per cent required radiologic services, and 12 per cent required gynecologic, urologic, pathologic and other services.

TABLE 1.—*Enrolment*

Month	Medical Plan	Surgical Plan	Total
March	1,300	56,758	60,118
April	1,341	60,368	61,709
May	1,352	61,783	63,135
June	1,416	63,646	65,062
July	1,594	65,388	66,982
August	1,700	65,749	67,449

PAYMENTS TO DOCTORS

For services during the first six months, a total of 826 doctors have been paid $92,609.45, or an average payment of $112.12. In addition, payments estimated to be $33,000 will be made for services rendered during this six month period as soon as incomplete and late monthly service reports can be approved by the medical advisory board.

At least one out of every eight doctors of medicine in Michigan has been paid, through Michigan Medical Service, for services to subscribers.

The average payment for a patient under the Surgical Benefit Plan has been $46.18; for a patient under the Medical Service Plan, $15.15, or an average of $40.44 per patient. The monthly payment to individual doctors has ranged from a low of $2 for an office visit to a high of $762.

TABLE 2.—*Statement of Experience from March 1 to July 31, 1940*

Earned income		$150,650.55	100.0%
Medical services:			
Paid	$87,611.45		
Reserve for pending and unreported services	15,434.44	103,045.89	68.4%
		$ 47,604.66	
Operating expenses		34,691.58*	23.0%
Income from operation		$ 12,913.08	8.6%
Other income		1,396.72†	
Net income		$ 14,309.80	

* Includes expenses for the month of February.
† "Other income" was derived from the initial $5 charges under the Medical Service Plan, from registration fees for nonmember doctors and from interest.

Doctors who have received payments for services are located in sixty-one of the eighty-three counties in Michigan.

In each month, the full schedule of benefits, equivalent to prevailing charges now made by doctors in Michigan for patients in the income group enrolled in Michigan Medical Service, has been paid for all services.

STATEMENT OF FINANCIAL EXPERIENCE

Conclusions relative to the financial experience under Michigan Medical Service must be tentative, as the exact status cannot be given until proper accounting can be made for unreported services. The reserve for pending and unreported services includes an allowance of the average cost for all incompletely reported services not yet paid and for an estimated number of unreported services. The latter estimate is based on a short period of operation and will be subject to correction until it can be computed on a longer period of experience.

As of July 31, 1940, the financial status for the first five months is shown in table 2.

An examination of the experiences under Michigan Medical Service to date indicates that the people in Michigan desire to participate in a nonprofit, nonpolitical, prepayment medical service plan. The inauguration of such a program by the medical profession can further the ideals of a great profession as well as arrange for the payment of medical services on a democratic basis. It appears increasingly evident that the success of the medical service plan will depend on the degree of cooperation it receives from doctors of medicine.

WOMAN'S AUXILIARY

Mississippi

The woman's auxiliary to the Northeast Mississippi Thirteen Counties Medical Society held its second quarterly meeting, June 11, at Macon with the president, Mrs. Bernard Patrick, presiding. The state president, Mrs. E. C. Parker of Gulfport, was guest of honor and presented her plan for the work of the auxiliaries, stressing June as *Hygeia* month, July as accident prevention month and August as doctors' check-up month. Dr. J. P. Wall, of Jackson, past president of the Mississippi State Medical Association, addressed the auxiliary on "The Menace of Socialized Medicine to the Present High Quality of Medical Service in the United States." Entertainment included tours of Macon's gardens and a barbecue.

Nebraska

The board of directors of the auxiliary to the Nebraska State Medical Association met September 17, Mrs. A. D. Brown, Central City, state president, presiding. At a luncheon given by Mrs. Brown, the guest of honor was Mrs. V. E. Holcombe of Charleston, W. Va., President of the Auxiliary to the American Medical Association. The members then attended a tea at the home of Mrs. J. Dewey Bisgard, given by the Omaha-Douglas Counties auxiliary.

South Dakota

Mrs. V. Eugene Holcombe of Charleston, W. Va., national president of the Medical Auxiliary, was in Huron, S. D., September 21, to attend a board meeting of the South Dakota State Medical Auxiliary. Those present were Mrs. R. A. Buchanan, Huron, state president; Mrs. F. C. Nilsson, Sioux Falls, president-elect; Mrs. G. H. Gulbrandson, Brookings, first vice president; Mrs. B. M. Hart, Onida, second vice president; Mrs. J. C. Hagin, Miller, recording secretary, and Mrs. J. C. Shirley, Huron, corresponding secretary and treasurer. Also present were committee chairman and district chairmen Mrs. Odah D. Stout, Pierre; Mrs. G. E. Burman, Carthage; Mrs. B. A. Bobb, Mitchell; Mrs. N. K. Hopkins, Arlington; Mrs. M. W. Pangborn, Miller, and Mrs. A. D. Hyden, Sioux Falls.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PULIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1495.

ARIZONA

State Health Officer in Military Service.—Dr. Frederick P. Perkins, Phoenix, recently appointed secretary and state superintendent of public health, left with the 158th Infantry of the Arizona National Guard for training camp at Fort Sill, Okla., September 23, according to *Public Health News*.

ARKANSAS

Changes in Health Officers.—Dr. Gardner H. Landers, Texarkana, has been appointed health director for Independence County.——Dr. Ewing M. Nixon, Little Rock, has been appointed director of the Mississippi County health unit with headquarters at Blytheville. He succeeds Dr. Roy E. Schirmer.——Dr. Ralph E. Weddington, formerly of Fort Smith, has been named medical director of district number seventeen with headquarters at Melbourne.

Society News.—The Sebastian County Medical Society was addressed, September 10, by Drs. Everett C. Moulton on "Hypertensive Retinitis" and Charles H. Finney, Fort Smith, "Hypertensive Cardiovascular Renal Disease."——Dr. Thomas D. Moore discussed "Use and Abuse of Urinary Antiseptics" before the Mississippi County Medical Society in Blytheville, September 3, and Dr. Conley H. Sanford, "Management of the Aged Patient." Both are of Memphis.——Among others, Drs. Joseph F. Shuffield and Paul L. Mahoney, both of Little Rock, addressed the Sevier County Medical Society in DeQueen, September 10, on "Fractures of the Wrist and Ankle" and "Chronic Cough Hemoptysis," respectively.—— The Pulaski County Medical Society was addressed, September 16, by Dr. Silas C. Fulmer, Little Rock, on nephritis.

CALIFORNIA

Southern California Meeting.—The Southern California Medical Association will hold its one hundred and third semiannual meeting at the California Hotel, San Bernardino, November 15-16. The program will consist of two symposiums, one on the present status of hypertension and the other on nonmalignant diseases of the colon, and the following papers:

Dr. Milo K. Tedstrom, Santa Ana, Postural Hypotension; Report of Two Cases.
Dr. Thomas Addis, San Francisco, Treatment of Nephritis.
Dr. Frederick L. Reichert, San Francisco, Circulatory Disturbance in the Upper and Lower Extremities.
Dr. Louis C. Bennett, Los Angeles, Intubation Management of Distention in Intestinal Obstruction.
Dr. James Vernon Luck, Los Angeles, Differential Diagnosis in Low Back Pain.
Dr. Charles Hunter Shelden, San Marino, Surgical Treatment of Spinal Cord Tumors.
Dr. Norman H. Williams, Beverly Hills, The Puerperal Cervix.

ILLINOIS

Personal.—Dr. Cornelius E. Kline, formerly of Vienna, has been appointed in charge of the Moline district health unit, succeeding Dr. Carl A. Peterson, who resigned on account of ill health.

Changes in State Personnel.—Dr. Roland R. Cross, Dahlgren, assistant director, state department of health, has been named acting health director and Dr. George W. Morrow, managing director of the Kankakee State Hospital, has been named acting director of public welfare, newspapers reported, October 19. The new appointees succeed Dr. Albert C. Baxter and A. L. Bowen, respectively. Dr. Cross graduated at the American Medical College, St. Louis, in 1910 and Dr. Morrow at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908.

Society News.—Dr. Charles M. Wilhelmj, Omaha, discussed "Physiologic Aspects of Shock" before the St. Clair County Medical Society, September 5, in East St. Louis.—— The Coles-Cumberland County Medical Society will be addressed, November 20, by Dr. Earl O. Latimer, Chicago, on "Anatomic Considerations in Repair of Inguinal and Femoral Herniae."—— Dr. Leo K. Campbell, Chicago, will discuss "Benefits and Dangers of Reducing" before the Stephenson County Medical Society in Freeport, November 21. Dr. Nathaniel G. Alcock, Iowa City, will address the society, December 19, on "The Value of Urological Findings in the Diagnosis of Abdominal Tumors."——Dr. Horton R. Casparis, Nashville, Tenn., discussed "Importance of Cooperation in Mental Health" before the Peoria City Medical Society, October 8.

Chicago

Personal.—Dr. Robert S. Berghoff, clinical professor of medicine, Loyola University School of Medicine, was recently awarded honorary membership in Alpha Omega Alpha at his alma mater, St. Louis University School of Medicine, St. Louis.

New Hematologic Service.—A new hematologic service at the Michael Reese Hospital has been opened under the direction of Dr. Raphael Isaacs. In addition to the treatment of patients and the study of blood, it is planned to carry on research work in diseases of the blood and blood-forming organs.

Dr. Carlson Presents Library to University.—Dr. Anton J. Carlson, professor and chairman of the department of physiology, Division of Biological Sciences, University of Chicago, has presented his scientific library to the university. His collection includes about 16,000 classified reprints of scientific articles, 1,200 books and research monographs, and complete files of fifteen journals. Dr. Carlson, who completed thirty-six years of active service on the university's faculty when he retired October 1, intends to remain active in research work. He will be professor emeritus.

Anniversary of Birth of Christian Fenger.—Northwestern University Medical School will observe the one hundredth anniversary of the birth of Dr. Christian Fenger with a special convocation in the Archibald Church Library, November 4. The centennial address will be delivered by J. Christian Bay, LL.D., librarian of the John Crerar Library of Chicago. There will be a display of numerous publications of Dr. Fenger's, including his thesis on "Carcinoma of the Stomach," which was submitted to the faculty of the University of Copenhagen for the degree of doctor of medicine. A death mask of Dr. Fenger will also be shown. In 1882 Dr. Fenger was appointed professor of pathology at Northwestern and in 1893 he became professor of surgery and chief of the surgical service of Passavant Hospital.

Society News.—The Polish Medical Society of Chicago was addressed, September 26, by Dr. Francis E. Senear on "Office Dermatology."——Among others, Drs. Abraham A. Low and Elizabeth P. MacDougall addressed the Illinois Psychiatric Society, October 3, on "Combined Picrotoxin and Metrazol Treatment of Mental Patients."—— The Chicago Roentgen Society was addressed, October 10, among others, by Drs. Jerry J. Kearns and Harold C. Voris on "The Early Management of Acute Head Injuries."——The Chicago Pediatric Society was addressed, October 15, by Drs. Katsuji Kato and Pei-kuang Li on "Determination of Blood Pyruvic Acid in Infants and Children: An Attempt to Diagnose Subclinical Deficiency of Vitamin B_1"; Bernard Gumbiner, "Spontaneous Pneumomediastinum in the Newborn Infant," and Stanley Gibson, "Auricular Fibrillation in Childhood."——Dr. Cornelius P. Rhoads, New York, will address a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 28, on "Physiological Aspects of Vitamin Deficiency."——The Society of Medical History of Chicago will be addressed, November 4, by Drs. Abraham Levinson on "Medical Medallions"; James E. Lebensohn, "Wollaston and Hemianopsia," and Jerome R. Head, "Bretonneau, Trousseau and Velpeau."

INDIANA

University News.—Dr. Alexander T. Ross, former research neurologist of the Michigan Farm Colony for Epileptics, now known as the Caro State Hospital for Epileptics, Wahjamega, Mich., has been appointed assistant professor of neurology at Indiana University School of Medicine, Indianapolis. Dr. Joseph E. Tether Jr. has been named as assistant to Dr. John D. Van Nuys, director of admissions of the university hospitals.

Dr. Harvey Resigns.—Dr. Verne K. Harvey has resigned as director of the Indiana State Board of Health, Indianapolis, to become chief medical officer of the U. S. Civil Service Commission at Washington, D. C., newspapers reported, October 1. Dr. Harvey graduated at the Indiana University School of Medicine in 1929. He received a certificate in public health at Johns Hopkins University in 1933, in which year he was named director of health of Indiana. He has been associate in pathology and bacteriology at his alma mater.

KANSAS

Society News.—Dr. Raynar T. Westman discussed "Undulant Fever" before the Wyandotte County Medical Society, Kansas City, September 24, and Dr. Lewis W. Angle, "Treatment of Postoperative Abdominal Wall Ulcers." Both are of Kansas City.——The Golden Belt Medical Society was addressed in Minneapolis, October 3, by Drs. Clyde B. Trees, Topeka, on "Hip Nailing"; George F. Gsell, Wichita, "Evaluation of Ocular Discomfort"; Abraham E. Hiebert, Wichita, "Treatment of Burns," and Morris Polsky, Kansas City, Mo., dermatology.——A symposium on diabetes mellitus was presented before the Shawnee County Medical Society, Topeka, October 7, by Drs. Don C. Wakeman, Archibald J. Brier, Paul E. Belknap, John L. Lattimore and James D. Bowen, all of Topeka.

LOUISIANA

Personal.—Dr. James Welch, Long Leaf, has been made medical director of the Central Louisiana Hospital for Insane in Pineville. Dr. Arthur L. Seale, who has been in charge of the hospital since Dr. Stonewall J. Phillips resigned as superintendent several months ago, was made assistant medical director.

MAINE

Fall Clinical Session.—The Maine Medical Association held its annual fall clinical session in Bangor, October 17, at the Bangor House and the Eastern Maine General Hospital. The first evening was devoted to a discussion of obstetrics by Dr. Abraham N. Creadick, associate clinical professor of obstetrics and gynecology, Yale University School of Medicine, New Haven, Conn. The second day was devoted to case presentations, clinical observations and symposiums. A lecture by Dr. George C. Wilkins, Manchester, N. H., on "The New Hampshire Plan for Cancer Control" concluded the program.

MARYLAND

Society News.—A dinner meeting of the Maryland Psychiatric Society and the neuropsychiatric section of the Baltimore City Medical Society, October 10, was addressed by Wade H. Marshall, Ph.D., and Philip Bard, Ph.D., on "The Segmental Basis of Cortical Localization" and Dr. Robert V. Seliger, "The Rehabilitation of the Alcoholic." All are from Baltimore.——A symposium on peptic ulcer was presented before the Baltimore City Medical Society, October 4, by Drs. William F. Rienhoff Jr., Lay Martin and Ernest H. Gaither. At a meeting of the society, October 20, the speakers were Drs. Oliver S. Lloyd, "A New Type of Lag Screw for Internal Fixation of Fractures of the Neck of the Femur"; Amos R. Koontz, "Experiences with the Injection Treatment of Hernia," and Harold R. Bohlman, "Sulfanilamide in the Treatment of Gas Gangrene, Compound Fractures and Traumatic Wounds."

MICHIGAN

Hospital News.—A new hospital is under construction at the Pontiac Motor Company, Pontiac. The unit is a single story brick building, containing two, four and six bed rest wards, pharmacy, eye examination room, nurses' rest room, medical records room and a complete operating room for emergency cases. It is air conditioned and will be connected with the Pontiac personnel offices. Dr. Ethan B. Cudney, medical director for the division, will be in charge.

Society News.—Dr. Frank H. Bethell, Ann Arbor, discussed "Anemias Related to Nutritional Deficiencies with Particular Reference to Pregnancy" before the medical section of the Wayne County Medical Society, Detroit, October 14.——The Southern Division of the Wayne County Medical Society was constituted an official branch of the parent organization by action of the council, October 4. Officers include Drs. Robert H. Proud, Flat Rock, president; Maurice P. Miller, Trenton, president-elect; John W. Nagle, Wyandotte, secretary and treasurer, and William H. Honor, Wyandotte, councilor for the ensuing year. The East Side, West Side, Highland Park, Dearborn and Southern medical societies are now within the framework of the county organization.

Symposium on Industrial Health.—The Saginaw County Medical Society will present a symposium on industrial health and safety at the Bancroft Hotel, Saginaw, November 12. Included among the speakers will be:

Dr. Kenneth E. Markuson, Lansing, Function and Services of the Industrial Hygiene Bureau of the Michigan Department of Health.
Melvin First, industrial hygienist, Northeastern district, Industrial Hygiene in the Saginaw Valley.
M. A. Snell, supervising engineer, Hartford Accident & Indemnity Company, Hartford, Conn., The Economy of an Adequate Industrial Health and Safety Program.
C. Grant Watters, Detroit, Industrial Safety and the Preservation of Manpower.
Ralph L. Lee, department of public relations, General Motors Corporation, The Public Relations Value of an Adequate Industrial Health and Safety Program.
Dr. Charles F. Engel, Homestead, Pa., The Industrial Physician and His Relation to Industrial Health and Safety.
Ethel Langenberg, R.N., Detroit, The Nurse in Industry.
C. E. Etheridge, treasurer, Macklin Company, Jackson, The Manufacturer's Evaluation of Industrial Health and Safety.
H. R. Ohlheiser, industrial hygienist, laboratory of industrial hygiene and toxicology, Fidelity and Casualty Company of New York, Industrial Health and Safety and Their Relation to National Defense.

At the dinner meeting, the speakers will be Drs. Frank Novy, Saginaw, and Henry Cook, Flint, president of the county medical society and chairman of the industrial health committee of the state medical society, respectively.

MINNESOTA

Officers of State Board of Health.—Dr. Erling S. Platou, Minneapolis, was recently reelected president of the Minnesota State Board of Health and Dr. Thomas B. Magath, Rochester, was elected vice president succeeding Mr. T. G. Bell, Duluth, who retired from the board. Leo Thompson, Little Falls, has been named to succeed Mr. Bell as a member and Dr. Frederick W. Behmler, Morris, has been appointed to succeed Dr. Edward T. Fitzgerald, Morris. Other members of the board are Dr. Ruth E. Boynton, Minneapolis; F. E. Bass, C.E., Minneapolis; Dr. Albert G. Schulze, St. Paul; A. C. Kean, D.D.S., Grand Rapids, and Gustav Bachman, Pharm.D., Minneapolis. Dr. Albert J. Chesley, St. Paul, was reappointed as secretary and executive officer.

Society News.—Dr. Arnold Schwyzer presented a paper before the Minnesota Academy of Medicine, St. Paul, October 9, entitled "Ulcerative Colitis."——A symposium on diseases of the blood was presented before the Ramsey County Medical Society, St. Paul, September 30. Dr. Ralph W. Warnock discussed "The Anemias" and Dr. Emmett V. Kenefick, "Leukemias and Leukemoid Reactions."——Dr. Irvine McQuarrie, Minneapolis, discussed "The Effect of War on Civilian Health in China" before the Hennepin County Medical Society, October 23. At the meeting October 30 the speakers will be Dr. Robert G. Green on "The Typical Characters of Virus Infections" and Dr. Erling S. Platou and Robert E. Hoyt, M.S., "Human Serum in Streptococcal Infections."——Dr. Henry C. Sweany, Chicago, gave a lecture at the Mayo Clinic, Rochester, October 1, on "Age Criteria in the Pathology of Tuberculosis."

MONTANA

Division of Industrial Hygiene.—A state division of industrial hygiene has been organized at Helena, according to the *Journal-Lancet*. Created by the 1939 legislature, the division will study health conditions and occupational diseases among workers in the state, investigate sanitary conditions and enforce industrial health regulations.

NEBRASKA

Society News.—Drs. Frank P. Murphy and Philip L. Romonek addressed the Omaha-Douglas County Medical Society, Omaha, September 24, on "First Aid to the Newborn" and "Carcinoma of the Larynx" respectively. Drs. Willis H. Taylor and Charles P. Baker presented case reports on intracranial hemorrhage in the newborn and congenital heart disease in the newborn. All are of Omaha.

NEW YORK

Society News.—Dr. Charles Gilmore Kerley, New York, addressed the Dutchess County Medical Society in Poughkeepsie, October 16, on "Thyroid Gland Abnormalities in Infants and Children."——At a meeting of the Medical Society of the County of Westchester, White Plains, October 15, Dr. William P. Thompson, New York, made an address on "An Evaluation of Newer Laboratory Methods."——Speakers at a meeting of the Syracuse Academy of Medicine, October 15, included Dr. Edward C. Hughes on "The Relationship of the Thyroid and Adrenal Glands to the Toxemias of Pregnancy."

New York City

Award to Head of Infantile Paralysis Foundation.—Mr. Basil O'Connor, president of the National Foundation for Infantile Paralysis, received the Goodrich Award for Distinguished Public Service at a ceremony in the B. F. Goodrich Arena at the New York World's Fair, October 15. In accept-

ing the award, Mr. O'Connor called it a "recognition by industry of the value of the work of the National Foundation for Infantile Paralysis to the public as a whole."

Appointments at Postgraduate Medical School.—Announcement is made of the appointment of Dr. Henry H. Ritter as executive officer of the department of traumatic surgery at New York Post-Graduate Medical School and Hospital, with the founder of the department, Dr. John J. Moorhead, remaining as consultant. Dr. George Anopol is now executive officer of the department of orthopedic surgery, succeeding Dr. Charles Ogilvy, who remains as consultant. Dr. Irving S. Wright has been made executive officer of the department of medicine, succeeding Dr. Walter G. Lough. Dr. Lough, previously professor of clinical medicine, becomes clinical professor of medicine.

NORTH CAROLINA

Ninth District Meeting.—The annual meeting of the Ninth District Medical Society was held in Mooresville, September 26. Dr. Dickinson Sergeant Pepper, Philadelphia, was the guest speaker at a banquet on "The Use of Sulfapyridine and Sulfathiazole in the Treatment of Pneumonia." Other speakers included Drs. John W. Erwin, Morganton, on "Thrombocytopenia with Leukopenia of Unknown Origin"; Carl V. Reynolds, state health officer, Raleigh, "Why a Health Department?"; James P. Rousseau, Winston-Salem, "Pituitary Adenomas"; Creighton Wrenn, Mooresville, "Some Complications of Pregnancy," and Lieut. Col. John H. Sturgeon, Fort Bragg, "The Physicians' Duties for Mobilization Under the Selective Service Act."

Memorial Hospital Dedicated.—Ceremonies dedicating the new Memorial Hospital were held in Charlotte, October 1, and the building was opened to patients October 7. Governor Clyde Hoey made the dedicatory address. Other speakers were Dr. William H. Walsh, Chicago, hospital consultant; Dr. Malcolm T. MacEachern, director of hospital activities, American College of Surgeons, Chicago, and Mr. C. Russell Shetterly, associate general counsel, Public Works Administration, Washington, D. C. The hospital has 325 beds including bassinets, and affiliated with it is the Good Samaritan Hospital with 100 beds for Negro patients. Mr. Fred M. Walker, for fourteen years general superintendent of the Duval County Hospital in Jacksonville, Fla., is administrator, and Dr. Brodie C. Nalle, Charlotte, is president and chief of the medical staff. Dr. Paul Kimmelstiel, recently associate professor of pathology at the Medical College of Virginia, Richmond, has been appointed pathologist and Dr. Allan Tuggle, instructor in radiology at Cornell University Medical College, is the radiologist. There will be a resident staff of eight physicians. Funds for the new hospital were assembled by a PWA grant of $450,000, a $350,000 bond issue, a subscription campaign that raised $135,000 and contributions from a number of other sources. The present institution represents a merger of the former St. Peter's Hospital and the Good Samaritan.

OHIO

Personal.—Dr. Russell B. Crawford has been selected to head the Lakewood City Hospital, Lakewood, succeeding Miss Elizabeth Harding, who resigned, effective September 1.——Dr. Lyman F. Huffman, Cleveland, has been appointed a member of the Ohio Public Health Council to succeed Dr. Clyde L. Cummer, Cleveland, resigned.——Dr. Charles C. Crosby, Ashtabula, has been appointed health officer of Ashtabula County, succeeding Dr. Jonas L. Hurst, Dorset.

Rachford Memorial Lectures.—Dr. James S. Plant, Newark, N. J., delivered the ninth annual series of Benjamin Knox Rachford Memorial Lectures at the Children's Hospital, Cincinnati, October 17-18. Dr. Plant's subjects were "Inflection Points in the Field of Behavior" and "Negativism, Its Treatment and Its Implications." The Rachford Lectureship was established by friends of Dr. Rachford to commemorate his many years of service to the University of Cincinnati College of Medicine and to the practice of pediatrics.

Postgraduate Day in Toledo.—The seventh annual Postgraduate Day of the University of Toledo will be presented, November 1, at the university. The guest speakers will be Drs. John S. Lockwood and Harrison F. Flippin of the faculty of the University of Pennsylvania School of Medicine, Philadelphia. Dr. Lockwood's subjects will be:

History and Mode of Action of Sulfanilamide.
Chemotherapy in Special Surgical Infections, Otogenic Infections and Meningitis; Septicemia; Cellulitis.
Chemotherapy in Prophylaxis and Treatment of Traumatic Wounds, Puerperal Infections and Peritonitis.

Dr. Flippin will speak on the following topics:

Pharmacology, Method of Administration and Toxicity of Sulfonamides.
Chemotherapy in Special Medical Infections (Urinary Tract, Scarlet Fever, Rheumatic Fever, Endocarditis, Malaria).
Chemotherapy of Respiratory Disease.

PENNSYLVANIA

Personal.—Dr. George B. Woods, Washington, 90 years old, received the degree of bachelor of science from Waynesburg College in September. A member of the class of 1872, Dr. Woods left college to enter medical school.——Robert L. Harding, D.D.S., formerly of Ann Arbor, Mich., has been appointed director of the department of oral and maxillofacial surgery at the Geisinger Memorial Hospital, Danville, it is reported.

Philadelphia

Hospital News.—Mercy Hospital presented its first symposium on diseases of the rectum, October 22. Among the speakers were Drs. Collier F. Martin, Harry E. Bacon and Thomas R. Peyton.

Dinner in Honor of Retiring Teachers.—The Medical Alumni Association of Temple University sponsored a dinner at the Union League Club, October 2, in honor of Drs. Frank C. Hammond, who recently retired as professor of gynecology, and Jesse O. Arnold, who retired as professor of obstetrics. Dr. William N. Parkinson, dean of the medical school and president of the alumni association, presided; the speakers included Charles E. Beury, LL.D., president of the university; Drs. Charles H. Henninger, Pittsburgh, then president of the Medical Society of the State of Pennsylvania; Francis F. Borzell, then president-elect of the state society; Edward L. Bortz, president of the Philadelphia County Medical Society; Wilmer Krusen and William Wayne Babcock.

Pittsburgh

Personal.—Dr. Oliver E. Turner has been appointed in charge of a new health district for Allegheny County outside of Pittsburgh, with offices in the Falk Clinic.

Hospital News.—Mercy Hospital presented its annual "Mercy Day" program, September 26, with Dr. Esmond R. Long, Philadelphia, as the speaker on "Diagnosis of Chronic Diseases of the Chest in the Light of the Pathologic Anatomy."

Symposium on Vertigo.—At a meeting of the Allegheny County Medical Society, October 15, a symposium on vertigo was presented, with the following speakers: Drs. Harold L. Mitchell and John A. Malcolm, on the neurologic and medical aspects; John F. McCullough and Leslie H. Osmond, roentgenologic interpretations; Robert J. Billings and Charles W. Weisser, the ophthalmologic point of view; Nathaniel A. Fischer, Ralph E. Stone and Humbert L. Riva, otologic interpretation, and Samuel S. Allen Jr. and Jerome F. Grunnagle, cerebral and cerebellar aspects.——Drs. John J. McAleese and Charles F. Elterich addressed the Pittsburgh Pediatric Society, October 18, on "Use of Zinc Oxide and Oil of Cloves Paste in the Treatment of Osteomyelitis" and "Sonne Dysentery" respectively.

SOUTH CAROLINA

Society News.—Dr. Joseph Decherd Guess, Greenville, was elected president of the Piedmont Post-Graduate Clinical Assembly at the annual meeting in Anderson in September, succeeding Dr. Edgar A. Hines, Seneca. Vice presidents elected were Drs. Joseph M. Feder, Anderson; James C. Harper, Greenwood; Benager C. Teasley, Hartwell, Ga., and Robert A. Ross, Durham, N. C. Dr. Archer L. Smethers, Anderson, was reelected secretary.

TENNESSEE

Society News.—Dr. Heddy S. Shoulders, Nashville, addressed the Davidson County Medical Society, Nashville, September 3, on "Gastrointestinal Roentgenology: An Analysis of Findings Over a Twenty Year Period." Speakers September 10 were Drs. Duncan Eve and Rollin A. Daniel Jr. on "Fractures of the Shaft of the Humerus."——At a meeting of the Chattanooga and Hamilton County Medical Society, September 5, the speakers were Drs. Samuel H. Long on "Allergy and the Eye, Ear, Nose and Throat," and Oliver L. Von Canon, "Anemias of Childhood."——At a meeting of the Dyer, Lake and Crockett Counties Medical Society, Dyersburg, September 4, the speakers, all of Dyersburg, were Drs. Jesse Paul Baird, on "Unusual Types of Intestinal Obstruction in Infancy"; Orren B. Landrum, "Parasagittal Meningioma and Multiple Myeloma of the Skull," and William E. Anderson, "Pernicious Anemia."

TEXAS

Public Health Meeting.—The annual meeting of the Texas Public Health Association was held in Fort Worth, September 30 to October 2, under the presidency of Dr. George A. Gray, Sweetwater. The speakers included Drs. Joseph W. Mountin, U. S. Public Health Service, Washington, D. C., on "The Complications of Regional Differences in Texas"; Frederick R. Lummis, Houston, "The Present Public Health Status of Heart Disease," and Frances C. Rothert, regional consultant, U. S. Children's Bureau, New Orleans, "Recent Developments in Maternal and Child Health Programs." Dr. Clarence Burke Brewster, Fort Worth, was chosen president-elect.

VIRGINIA

Annual Lectures in Richmond.—The third annual series of lectures has been announced by the Richmond Academy of Medicine. The first lecture was presented October 22 by Rolland J. Main, Ph.D., Richmond, on "Integration and Terminology of the Endocrine System." The remainder of the series will be:

Dr. Harry B. Van Dyke, New Brunswick, N. J., Physiological Studies of the Anterior Pituitary Gland, November 19.
Edgar Allen, Sc.D., New Haven, Conn., Puberty and the Menstrual Cycle, January 21.
Dr. Willard M. Allen, St. Louis, Endocrine Therapy of Abnormal Menstruation and the Menopause, February 4.
Dr. Edwin C. Hamblen, Durham, N. C., Sterility and Pregnancy from an Endocrinological Standpoint, February 18.
Dr. John Eager Howard, Baltimore, Androgens and Androgenic Therapy, March 11.

GENERAL

Sedgwick Medal Awarded Posthumously to Dr. Zinsser.—The Sedgwick Memorial Medal of the American Public Health Association was awarded posthumously, October 8, to Dr. Hans Zinsser. At the time of his death, Dr. Zinsser was professor of bacteriology and immunology at Harvard Medical School, Boston.

Health Council Agencies Move.—The National Tuberculosis Association is moving its offices during October from Rockefeller Center to 1790 Broadway. According to the October *Bulletin* of the association, other members of the National Health Council that have also been in Rockefeller Center will move to the Broadway address.

Refresher Series on Radiology.—The Radiological Society of North America, Inc., has announced a refresher series to be conducted at the Hotel Statler, Cleveland, December 1-6. It will be the third annual course to be offered as a part of the annual meeting of the society. Additional information may be obtained from Dr. Lewis G. Allen, 905 North Seventh Street, Kansas City, Kan.

Fellowship Fund in Memory of Dr. Brown.—Friends of the late Dr. Lawrason Brown, for many years head of the Trudeau Sanatorium, Saranac Lake, N. Y., have established the Lawrason Brown Memorial Fund to finance one or more fellowships for research in diseases of the chest. The fund will be managed by the Saranac Lake Society for the Control of Tuberculosis, and if at any time that organization should cease to exist the management of the fund will be offered first to Johns Hopkins University. The present committee is composed of Drs. Leroy U. Gardner and James Woods Price, Saranac Lake; Louis Hamman, Baltimore; Esmond R. Long, Philadelphia; David R. Lyman, Wallingford, Conn., and William P. Thompson, New York.

Brinkley Loses Libel Suit.—The New York *Times* for October 15 noted that the U. S. Supreme Court denied Dr. John R. Brinkley a review of the decision of the United States Fifth Circuit Court of Appeals on his case against Dr. Morris Fishbein, Editor of THE JOURNAL. The basis of the suit was an article in *Hygeia* entitled "Modern Medical Charlatans," and reference was made to the denial of the Fifth Circuit Court of Appeals in New Orleans in THE JOURNAL, April 27, page 1682. The case was originally tried in the Federal Court of the Western District of Texas, in which the jury returned a verdict for the defendant (THE JOURNAL, April 8, 1939, p. 1346). Brinkley then appealed to the Circuit Court of Appeals and subsequently to the Supreme Court. Both appeals resulted in denial of reviews.

Fellowships in Psychoanalysis.—The Boston Psychoanalytic Institute announces three additional Sigmund Freud Memorial Fellowships for Psychoanalytic Training, to begin September 1941. These fellowships are open to graduates of a recognized medical school who have had at least one year of general hospital training and two years' work in psychiatry and covers tuition fees only. One additional fellowship for training in applied nontherapeutic psychoanalysis will be open to those who have a doctor of philosophy degree or an equivalent degree in the field of anthropology, sociology, pedagogy and so on. Further information may be obtained from Dr. Moses Ralph Kaufman, chairman of the educational committee, Boston Psychoanalytic Institute, 82 Marlborough Street, Boston. Applications close on February 1.

Bequests and Donations.—The following bequests and donations have recently been announced:

University of Pennsylvania, a trust fund of $40,000 and Rush Hospital, Philadelphia, $5,000 for treatment and study of diseases of the digestive system by the will of Mrs. Mary Hawley Thompson, Media, Pa.
Jewish Hospital, Philadelphia, $198,519 to build a nurses' home as a gift from the late Mary S. Hirsh.
Emergency Hospital, Washington, D. C., $50,000 by the will of the late Mrs. May Palmer Depew.
Presbyterian, Northeastern, Episcopal and Frankford hospitals, Philadelphia, and Abington Memorial Hospital, Abington, Pa., $10,000 each by the will of the late Charles P. Cochrane.
Presbyterian Hospital, Chicago, $10,000 by the will of the late Warren A. Lamson.
Lenox Hill Hospital, New York, $3,000 by the will of the late Mrs. Ida Welz.
New York Medical College and Flower and Fifth Avenue Hospitals, $242,531 from the estate of Mrs. Helen S. Case.
Germantown Hospital, Germantown, Pa., $10,000 to endow two beds, by the will of Miss Mary McCullagh.
International Cancer Research Foundation, Philadelphia, will receive the greater part of an estate of $265,000 left by Mrs. Gertrude Wellington.

Pan American Congress of Ophthalmology.—Permanent organization of a Pan American Congress of Ophthalmology was effected at the first meeting of the congress in Cleveland, October 11-12. Dr. Harry S. Gradle, Chicago, was elected president; Dr. Conrad Berens, New York, executive secretary for North America and Dr. Moacyr E. Alvaro, São Paulo, Brazil, for the Latin American countries. Vice presidents elected were: Drs. Frank Brawley, Chicago; Samuel Hanford McKee, Montreal, Canada; Edward Jackson, Denver; Tomás R. Yanes, Havana, Cuba; A. Vasquez-Barriere, Montevideo, Uruguay; José Pereira Gomes, São Paulo, Brazil, and Enrique Demaría, Buenos Aires, Argentina. It is expected that the next congress will be held in Montevideo in 1943. About twenty Latin Americans attended the congress, representing Brazil, Costa Rica, Cuba, Chile, Colombia, Guatemala, Panama and Puerto Rico. The congress was sponsored by the American Academy of Ophthalmology and Otolaryngology.

Society of Obstetrics and Gynecology.—The Pacific Coast Society of Obstetrics and Gynecology will hold its ninth annual meeting in San Francisco, November 6-9, under the presidency of Dr. Alice F. Maxwell, San Francisco. Papers will be presented by:

Dr. Gordon G. Thompson, Seattle, Wash., Fibroids in Pregnancy.
Dr. Arthur B. Nash, Victoria, B. C., Manchester Operation.
Dr. Paul A. Gliebe, San Francisco, Dyspareunia and Related Somatic Manifestations.
Dr. John C. Irwin, Los Angeles, Extraperitoneal Cesarean Section: A Modification of Latzko Technic with Report of Thirty Cases.
Dr. Donald G. Tollefson, Los Angeles, Anesthesia and Analgesia in Labor.
Drs. William Benbow Thompson and Emil J. Krahulik, Los Angeles, Fetal Resuscitation.
Dr. Hervey K. Graham, San Diego, Routine Chest Roentgenograms in Pregnancy: A Study Based on 800 Consecutive Cases.
Dr. Olin M. Holmes, San Mateo, High Protein Diet in Pregnancy.
Drs. Daniel G. Morton and Charles Thomas Hayden, San Francisco, Incidence of Ovulation as Determined by Endometrial Biopsies.
Dr. Bernard J. Hanley, Los Angeles, Pregnancy and Syphilis.
Dr. Erle Henriksen, Los Angeles, Resection of the Superior Hypogastric Plexus.

Government Services

Applications Closed for Temporary Medical Officers —Permanent Positions Still Open

The U. S. Civil Service Commission announces that applications are closed for temporary and part time civilian medical officers in connection with expansion of the U. S. Army, as enough have been received to supply prospective needs.

The commission calls attention to the fact, however, that there is an urgent need for medical officers and senior and associate medical officers to fill permanent positions in other agencies. These positions pay from $3,200 to $4,600 a year and include fourteen specialized branches of medicine. There is also need for junior medical officers at St. Elizabeths Hospital, Washington, D. C., at $2,000 a year. Information and application forms may be obtained at the office of the board of civil service examiners at any first or second class postoffice or from the U. S. Civil Service Commission, Washington, D. C., or from any of the commission's district offices.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 28, 1940.

The Bombing of London Hospitals

The indiscriminate bombing of London has involved several hospitals, as many as three in one night. In one case a high explosive went straight through the glass dome, crashed through a five story staircase and landed on the ground floor. Fortunately there was only one casualty, a doctor who was working in his office. The desk in front of him disappeared and he remained perched on his chair near the wall with a 50 feet chasm in front of him. Despite a badly cut head he was rescued by firemen alive. When nurses opened the doors of the various wards they found a yawning abyss in front of them. The staff worked heroically getting 100 patients to the ground floor by an emergency method. Some were slid down a wooden ramp which had been put up only the day before. Others were carried down fire escapes. Among the patients were thirty casualties from previous air raids. Two more bombs fell on the works department. Though stricken, the hospital carried on. While the patients were being evacuated, four air raid casualties from the area were dealt with and one serious operation was performed.

In another attack doctors and defense workers carried on in the street while bombs were falling and a direct hit occurred on a nearby shelter containing 1,000 people. The injured were attended to in the street in the glare of the flame-lit sky and transferred to waiting ambulances while the bombers droned above. Among fourteen killed by this one bomb were mothers and children. Working in the light of fires and carefully shielded torches, doctors improvised tourniquets and dressed wounds.

The largest of the hospitals, the London, has been bombed several times. The two hundredth anniversary of its foundation has just been passed. The king sent a message of congratulation in which he expressed admiration for the way in which the medical and nursing staffs are carrying on in spite of the repeated bombing. He visited the hospital and, with the queen, they walked through the four wards set aside for air raid casualties, where injured men and women told them of their adventures.

The hospitals are working under new conditions. Their ordinary patients have been removed to safer localities and they are being used for the treatment of air raid casualties, which are dealt with in the first instance by an ambulance service organized for the purpose before the outbreak of war. Great demands have been made on this service as well as on the auxiliary fire department organized to cooperate with the regular fire department in dealing with the fires produced by incendiary bombs. The experiences of the last few weeks have shown the soundness of these services, which consist of volunteers trained for the purpose. They have shown an excellent spirit and worked with great devotion. They have suffered air-raid casualties, of which some have been fatal. The ambulance service has had to transport many air raid casualties to the hospital and in spite of the blackout the average time taken to reach a casualty has been only seven minutes from the receipt of the call. Casualties among the personnel have been numerous. The London County Council is providing for persons rendered homeless by air raids rest centers, bedding and hot meals.

Four Physicians Killed in London Air Raids

During the daily indiscriminate bombing of London, physicians, like other citizens, carry on. At a meeting of the London Insurance Committee (the body which controls the administration of panel practice) it was reported that as the result of air raids the offices of many London insurance practitioners had been demolished or put out of action. Four physicians have lost their lives. In one case the wife, daughter and maidservant of the physician were killed with him. An appeal made to physicians to stand by their unfortunate colleagues and carry on their work had met with the readiest response. Panel physicians had agreed to attend any insured persons, whether on their lists or not. In view of the depletion by war service of physicians available for civilian service, it was decided to increase the maximum of persons allowed on a physician's list by 5 per cent.

United States Medical Unit in England

An advance party of an American hospital foundation has arrived in England and will proceed to London after seeing some hospital arrangements in the Northwest. Mr. Harry Platt, one of the Ministry of Health's consultants in orthopedic surgery, who has acted as link between the ministry and trustees in America, states that American sympathizers with Britain who want to help in the treatment of war injuries have established a foundation, duly incorporated as a charity, like the Rockefeller and Carnegie trusts, with the object of providing, if need be, 1,000 beds free to this country. The leading spirit is Dr. Philip Wilson, professor of orthopedic surgery at Columbia University College of Physicians and Surgeons, who was in France in 1915 with the American Ambulance, joined the Harvard unit at a British hospital and later served with the American Expeditionary Forces. Dr. Wilson enlisted the help of American well wishers in many towns for his scheme and funds came in rapidly. The financing of the unit is based on the Allied Relief Fund, which theoretically is available for any form of humanitarian work, feeding, medical and so on. The president is Mr. Winthrop Aldrich and the trustees include Mr. A. P. Sloan of General Motors Corporation and Mrs. Alfred Dupont.

Dr. Wilson leads an advance party of seven surgeons, three nurses and two secretaries. The British Ministry of Health, which is responsible for the Emergency Casualty Services, will give the visitors the opportunity of helping in one of its hospitals. If the war becomes more intense and there are many casualties, reinforcements will be sent from America. Possibly the Ministry of Health could then place a hospital at their disposal, but at present our casualties are being steadily discharged from the hospitals and air raid casualties are dispersed all over the country, so a central American hospital is not needed. The members of the party on their arrival could scarcely believe their eyes when they saw the port so completely undamaged and normal. They brought two truckloads of surgical instruments and have $250,000 for a year's working.

Empty Beds in the War Hospitals

How very different the attack by air on Britain has turned out from what was expected was shown in the House of Commons by Mr. Churchill. More than 150,000 beds were got ready but are still empty. During August 1,075 civilians were killed in Great Britain and a slightly greater number were seriously injured. For a population of 45,000,000 these losses were very small.

Marriages

FRANCIS EDWARD O'NEILL, Sanderson, Texas, to Miss Estella Schellhase of San Antonio, June 25.

BENJAMIN N. SEARCY, Rising Sun, Ind., to Miss Dorothy Means, in Lawrenceburg, June 9.

HAROLD C. BERNSTEIN, Los Angeles, to Miss Barbara Rothschild of Chicago in September.

SIDNEY STILLMAN, New Orleans, to Miss May Goldie Setzer, at Jacksonville, Fla., June 16.

EDWIN LEVER LAME to Miss Mary Massey Perkins, both of Philadelphia, September 7.

WILLIAM A. STUCKEY to Miss Mary Frances Tucker, both of Sumter, S. C., recently.

Deaths

Wilfred Thomason Grenfell, St. Anthony, Newfoundland, founder of the Labrador Medical Mission, died, October 9, at his home in Charlotte, Vt., of heart disease, aged 75. Dr. Grenfell was born Feb. 28, 1865, in England. He was a licentiate of the Royal College of Physicians of London and member of the Royal College of Surgeons of England in 1888. After a period as house physician at London Hospital, he organized a hospital service for the fisheries of the North Sea and cruised with fishermen from the Bay of Biscay to Iceland, establishing homes for them and providing mission services at sea. In 1892 he went to Newfoundland on a small boat fitted out with hospital supplies. That voyage decided Dr. Grenfell's career. During the following winter the governor of Newfoundland invited him to take up regular work along the Labrador coast. Materials were sent out for a hospital unit, to be established 200 miles farther north, and from this grew the International Grenfell Association, which by 1937 had six hospitals, seven nursing stations, four hospital ships, four orphanage boarding schools, fourteen industrial centers, three agricultural stations, twelve clothing distribution centers, a supply schooner and a lumber mill. Dr. Grenfell served in the World War as a major in charge of the medical unit sent by Harvard University. He received honors from colleges in United States and England, among others a Doctor of Laws from Williams College, McGill University, Middlebury College, Princeton, Bowdoin and St. Andrews, and a Master of Arts degree from Harvard. He was awarded a fellowship and the Murchison Bequest of the Royal Geographical Society, a gold medal of the Academy of Social Sciences of North America, and the Livingstone Gold Medal of the Scottish Geographical Society. He was a fellow of the American College of Surgeons. In 1927 he was knighted by King George V; in 1929 he was installed a rector of St. Andrews University in Scotland. He was the author of "Vikings of Today," "Harvest of the Sea," "Off the Rocks," "Adrift on an Ice Pan," "Down to the Sea," "A Labrador Doctor" (autobiography), "Northern Neighbors" and many others.

Ernest A. Pribram ✠ Chicago; Deutsche Universität Medizinische Fakultät, Prague, Czechoslovakia, 1903; formerly professor of pathology at the University of Vienna and assistant professor of pathology at Rush Medical College; clinical professor of clinical microscopy and at various times professor of bacteriology and preventive medicine and professor of medicine at Loyola University School of Medicine; assistant, later assistant director and director of the State Serum Institute, Vienna, from 1907 to 1926; member of the American Association of Pathologists and Bacteriologists, Society of American Bacteriologists and the American Society of Clinical Pathologists and other scientific societies; member of the International Society of Microbiology and in 1930 president of the American Committee on Nomenclature in Paris; corresponding member of the Gesellschaft der Aerzte, Vienna; Deutsche Chemische Gesellschaft, Berlin, and the Austrian Cancer Research Society, Vienna; pathologist to St. Elizabeth's Hospital, Chicago, and St. Therese's Hospital, Waukegan; aged 61; died, September 14, in St. Joseph's Hospital, Lewiston, Mont., of injuries received in an automobile accident.

Alexander Swanson Begg ✠ Boston; Drake University College of Medicine, Des Moines, Iowa, 1907; instructor in pathology at his alma mater from 1907 to 1909, assistant professor of pathology, histology and embryology, 1909-1910, and professor of histology and embryology from 1910 to 1913; teaching fellow at Harvard Medical School, 1911-1912, and at various times instructor in comparative anatomy, dean of the graduate school of medicine and demonstrator in anatomy and instructor of histology; research associate at the Carnegie Institution, 1915-1916; dean and Waterhouse professor of anatomy at the Boston University School of Medicine; served during the World War; member of the executive council of the Association of American Medical Colleges from 1929 to 1932; past president of the Norfolk District Medical Society; member and formerly on the executive committee of the National Board of Medical Examiners; member of the American Association of Anatomists; since 1935 secretary of the Massachusetts Medical Society; recently state chairman of the medical preparedness committee in Massachusetts; aged 59; died, September 26, of coronary thrombosis.

William Augustus Howe, Phelps, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1888; member of the Medical Society of the State of New York; past president of the Ontario County Medical Society; formerly county coroner; for many years health officer; deputy commissioner of health of New York State from 1910 to 1914; chief of the medical inspection bureau of the state education department from 1915 to 1934; director, division of communicable diseases, state department of health, in 1909; past president of the child hygiene section of the National Education Association; one of the founders of the American Association of School Physicians, of which he was president, 1927-1928; in 1929 was awarded the Ling Foundation Medal for distinguished service to child health; editor of the *School Physicians' Bulletin* from 1930 to 1937; aged 78; died, September 11, in the Clifton Springs (N. Y.) Sanitarium, of cerebral thrombosis and arteriosclerosis.

Joseph McIver ✠ Philadelphia; University of Texas School of Medicine, Galveston, 1912; member of the American Neurological Association; past president of the Philadelphia Neurological Society; commissioned lieutenant in the U. S. N. R. F. in 1917, serving as neuropsychiatrist at the United States Naval Hospital, League Island, until June 1919; formerly instructor and associate in neurology at the University of Pennsylvania School of Medicine; chief neurologist to Misericordia, Fitzgerald-Mercy and Nazareth hospitals; chief of the neuropsychiatric staff of the Philadelphia General Hospital; neuropsychiatrist to the House of Detention of Philadelphia; aged 53; died, September 7, in Bryant, Texas, following an operation for appendicitis.

Abraham Louis Levin ✠ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1907; clinical professor of medicine, Louisiana State University School of Medicine; member of the National Gastroenterological Association; past president of the Louisiana Society of Gastroenterology; served during the World War; on the staffs of the Touro Infirmary, Hotel Dieu and the Charity Hospital; aged 59; died, September 15, of coronary occlusion.

Hermann J. G. Koobs ✠ Rogers, Ark.; Northwestern University Medical School, Chicago, 1902; past president of the South Dakota State Medical Association; member of the House of Delegates of the American Medical Association in 1919; member of the American Academy of Ophthalmology and Otolaryngology; aged 71; died, September 3, of diverticulitis with perforation of the colon.

Charles Robinson Hume, Anadarko, Okla.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1874; member of the House of Delegates of the American Medical Association, 1918-1919; member and past president of the Oklahoma State Medical Association; past president of the Caddo County Medical Society; formerly county health officer; aged 92; died, August 9.

Charles Spalding Hunt ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1905; professor of anesthesia at the New York Polyclinic Medical School and Hospital; member of the American Society of Anesthetists; on the staff of St. John's Hospital and the Long Island College Hospital; aged 65; died, September 9, in the Polyclinic Hospital.

Oscar Richardson, Lakeville, Mass.; Harvard Medical School, Boston, 1900; member of the Massachusetts Medical Society and the American Association of Pathologists and Bacteriologists; at one time associate medical examiner for Suffolk County; formerly assistant pathologist at the Massachusetts General Hospital, Boston; aged 80; died, August 28.

Thomas Clifford Neal, Anniston, Ala.; Emory University School of Medicine, Atlanta, Ga., 1918; member of the Medical Association of the State of Alabama; at one time district health commissioner of unit number 2, composed of Catoosa, Whitfield, Murray and Gordon counties in Georgia; aged 51; died, September 2, in St. Louis of pulmonary tuberculosis.

Robert Phillips Munson, Medina, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1922; formerly secretary of the Orleans County Medical Society; served during the World War; aged 43; on the staff of the Medina Memorial Hospital, where he died, September 11, of cirrhosis of the liver.

Alexander Ross Alguire, Cornwall, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1905; L.R.C.P., of London, England, and M.R.C.S., England, 1908; fellow of the American College of Surgeons; on the staffs of the Cornwall General Hospital and Hotel Dieu Hospital; aged 55; died, August 29.

George Marion Blickensderfer ✠ Denver; Denver and Gross College of Medicine, 1903; an Affiliate Fellow of the American Medical Association; past president of the staff of

the Children's Hospital; aged 68; died, September 8, of thrombosis of the femoral artery, myocarditis and arteriosclerosis.

Everett E. Watson ⊕ Salem, Va.; University College of Medicine, Richmond, 1912; member of the American College of Chest Physicians and the American Association for Thoracic Surgery; medical director of the Mount Regis Sanatorium; aged 52; died, August 3, of pulmonary tuberculosis.

Miles Guthrie Varian, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1901; aged 67; died, August 12, in the Huntington Memorial Hospital, Pasadena, Calif., of incisional hernia, partial intestinal obstruction, bronchopneumonia and acute myocarditis.

Frederick Rice Waldron, Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; past president of the Washtenaw County Medical Society; on the staff of St. Joseph's Mercy Hospital; aged 64; died, August 30, of coronary heart disease.

Addison May Rothrock, Kerrville, Texas; University of Pennsylvania Department of Medicine, Philadelphia, 1893; veteran of the Spanish-American and World wars; aged 70; died, September 1, in the Veterans Administration Facility, Legion, of tuberculosis.

Theodore John Redelings, San Diego, Calif.; Chicago Medical College, 1887; member and past president of the State Medical Society of Wisconsin; past president of the Marinette County Medical Society; at one time city health officer; aged 77; died, September 4.

Edmund Francis Walsh, Boston; Harvard Medical School, Boston, 1908; member of the Massachusetts Medical Society; served in various capacities on the staff of the Boston City Hospital; aged 58; died, August 20, of coronary occlusion, while bathing.

Albert Salomon Hoheb ⊕ Rutherford, N. J.; University of Maryland School of Medicine, Baltimore, 1921; served during the World War; aged 47; on the staff of the Passaic (N. J.) General Hospital, where he died, September 13, of chronic myocarditis.

Yetta Scheftel, Chicago; Rush Medical College, Chicago, 1921; clinical instructor of neurology at her alma mater; aged 56; on the staff of the Women's and Children's Hospital, where she died, September 9, of peritonitis and carcinoma of the uterus.

James Krom ⊕ Saugerties, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; for many years health officer and medical inspector of the schools; aged 71; died, September 4, in the Kingston (N. Y.) Hospital.

George Pinckney Reid, Forest City, N. C.; University College of Medicine, Richmond, 1895; member of the Medical Society of the State of North Carolina; at one time bank president; formerly county coroner; aged 78; died, September 8.

Frederick Sumner Briggs ⊕ Brandon, Vt.; Columbia University College of Physicians and Surgeons, New York, 1907; served during the World War; formerly member of the school board and health officer; aged 58; died, September 8.

Thomas William Fields, Dresden, Tenn.; Kentucky School of Medicine, Louisville, 1890; University of Nashville (Tenn.) Medical Department, 1902; formerly mayor; served during the World War; aged 76; died, September 4, of carcinoma.

Danforth C. Cowles ⊕ Fullerton, Calif.; University of Minnesota Medical School, Minneapolis, 1901; veteran of the Spanish-American War; past president of the Orange County Medical Society; aged 66; died, August 28.

Albert Frederick Hanlon, Greenwich, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1907; on the staff of the Greenwich Hospital; aged 57; died, September 9, of arteriosclerosis and coronary occlusion.

William Simmons, Lakeville, Conn.; Long Island College Hospital, Brooklyn, 1891; at one time on the staffs of the Brooklyn Eye and Ear, Kings County and Jewish hospitals, Brooklyn; aged 80; died, September 6.

Louis Gilbert Newman, Westfield, N. J.; New York Homeopathic Medical College and Hospital, 1895; aged 67; died, September 9, in the Muhlenberg (N. J.) Hospital of arteriosclerosis and bronchopneumonia.

Eugene Chester Seawright, Fayetteville, Ga.; University of the South Medical Department, Sewanee, Tenn., 1904; formerly mayor; aged 59; died, September 2, in a hospital at Atlanta of carcinoma of the pancreas.

Carroll Colby Burpee, Malden, Mass.; Boston University School of Medicine, 1896; served during the World War; formerly chairman of the board of health; aged 67; died, September 10, of cardiac decompensation.

Boris Gordon Glasgow, Bridgeport, Conn.; University of Moscow Faculty of Medicine, Moscow, Russia, 1896; served in the Japanese, Balkan and World wars; aged 71; died, September 6, in St. Vincent's Hospital.

Franklin Pierce Russell, Akron, Ohio; Charity Hospital Medical College, Cleveland, 1880; aged 87; died, September 5, in the City Hospital of coronary thrombosis and hemorrhage due to varicose veins of the larynx.

Burton Clarence Rumbel, Conyngham, Pa.; Medico-Chirurgical College of Philadelphia, 1905; member of the Medical Society of the State of Pennsylvania; aged 65; died, September 3, of cardiorenal disease.

Bartholomew Maxwell Howley ⊕ New Brunswick, N. J.; University of the City of New York Medical Department, 1894; formerly on the staffs of the Middlesex and St. Peter's hospitals; aged 69; died, September 2.

Clarence Abraham Ihle, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1902; veteran of the Spanish-American War; aged 62; died, September 7, in the Miami Valley Hospital of coronary occlusion.

Ludwig Oulmann ⊕ New York; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, 1898; on the staff of the Lenox Hill Hospital; aged 65; died, September 16, of heart disease.

George Bruce Barrow, Staunton, Va.; Medical College of Virginia, Richmond, 1910; member of the Medical Society of Virginia; on the staff of the Western State Hospital; aged 55; died, September 1.

Patterson East, Lafayette, Tenn.; University of Tennessee Medical Department, Nashville, 1891; member of the Tennessee State Medical Association; aged 77; died, August 25, in a hospital at Nashville.

William David Peckham ⊕ Utica, N. Y.; Baltimore Medical College, 1897; at one time state senator; formerly health officer and coroner; aged 65; died, September 9, of coronary thrombosis.

Louis W. Satterlee, Alexandria, Minn.; Hahnemann Medical College and Hospital, Chicago, 1894; for many years health officer; aged 84; died, August 30, of cerebral hemorrhage and arteriosclerosis.

James Huff McCurdy, Springfield, Mass.; University of the City of New York Medical Department, 1893; aged 74; died, September 4, in the Springfield Hospital of carcinoma of the bladder.

Jennie A. Beardsley ⊕ Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1895; formerly on the staffs of the Jackson Park and Englewood hospitals; aged 73; died, September 13.

Abram Everett Frye, Youngstown, Ohio; College of Medicine and Surgery, Chicago, 1903; member of the Ohio State Medical Association; aged 69; died, September 3, of arteriosclerosis.

Arthur C. Byas, Memphis, Tenn.; Meharry Medical College of Walden University, Nashville, 1914; aged 57; died, July 28, in the Collins Chapel Connectional Hospital of acute gastritis.

Frank Marion Hall, Sylvan Beach, N. Y.; Baltimore Medical College, 1897; town health officer and school physician; aged 68; died, September 6, in the Main Street Hospital, Oneida.

Kristian Egilsrud, Minneapolis; Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1892; aged 72; died, August 31, of pulmonary embolus and carcinoma of the tongue.

Theodore Julius Yetina Miller, Fords, N. J.; Long Island College of Medicine, Brooklyn, 1934; member of the Medical Society of New Jersey; aged 31; died, September 4.

John Duff McBarron ⊕ New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1892; aged 73; died, August 25, in St. Luke's Hospital.

Henry George Cameron, Weyburn, Sask., Canada; McGill University Faculty of Medicine, Montreal, Que., 1924; on the staff of the Weyburn Mental Hospital; aged 44; died, August 6.

Matthew Bunyan Cameron, Eutaw, Ala.; Medical College of Alabama, Mobile, 1886; member of the Medical Association of the State of Alabama; aged 79; died, August 25.

George Benjamin Baylis Jr., Collins, Miss.; University of Tennessee Medical Department, Nashville, 1925; aged 43; died, August 27, in the Methodist Hospital, Hattiesburg.

John Riordon ✠ Rutherford, N. J.; University of Buffalo School of Medicine, 1893; for many years on the staff of St. Mary's Hospital, Passaic; aged 72; died, September 2.

Albert P. Kittle, Newton, Ill.; Barnes Medical College, St. Louis, 1904; aged 69; died, September 12, in the Olney (Ill.) Sanitarium of myocarditis and endocarditis.

Rudolph Angus Nichols Sr., Richmond, Va.; Medical College of Virginia, Richmond, 1895; member of the Medical Society of Virginia; aged 67; died, September 6.

Enoch Wilson Baxter, Moyock, N. C.; College of Physicians and Surgeons, Baltimore, 1887; member of the Medical Society of Virginia; aged 79; died, August 10.

Clarence Edward Ressler, Anthony, Kan.; Hahnemann Medical College and Hospital, Chicago, 1896; aged 68; died, July 16, of arteriosclerosis and hypertension.

E. Agnes Scott Brandon, Denver; Denver College of Physicians and Surgeons, 1909; member of the Colorado State Medical Society; aged 76; died, August 13.

Isaiah Frank, New York; New York University Medical College, New York, 1898; aged 64; died, September 14, in the Flushing (N. Y.) Hospital of pneumonia.

Henry Joseph Niebauer, Madison, Wis.; University of Wisconsin Medical School, Madison, 1934; aged 30; was drowned, August 20, in Lake Mendota.

Stephen Yerkes Van Meter, Los Angeles; University and Bellevue Hospital Medical College, New York, 1904; aged 64; died, July 10, of coronary thrombosis.

Judson N. Woodworth, Santa Monica, Calif.; Hahnemann Medical College and Hospital, Chicago, 1878; Civil War veteran; aged 97; died, August 20.

John McE. Ward, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 77; died, August 30, in the Jewish Hospital.

Anthony White, Greenville, S. C.; Atlanta (Ga.) Medical College, 1894; member of the South Carolina Medical Association; aged 70; died, August 21.

Charles Ware, Orange City, Fla.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1883; aged 87; died, August 29.

Linwood H. Dorr, Dresden Mills, Maine; University of Vermont College of Medicine, Burlington, 1889; aged 74; died, July 13, of chronic nephritis.

Philip A. Hoffmann, Campbellsport, Wis.; State University of Iowa College of Medicine, Iowa City, 1887; aged 87; died, August 29, of bronchiectasis.

Henry Bowen Frazier, Bluefield, Va.; College of Physicians and Surgeons, Baltimore, 1897; aged 68; died, August 9, in the Bluefield Sanitarium.

Frank L. Van Gorder, Coffeyville, Kan.; University Medical College of Kansas City, Mo., 1907; aged 73; died, August 20, at Torch Lake, Mich.

George Houghton Clapp ✠ Erie, Pa.; Jefferson Medical College of Philadelphia, 1907; served during the World War; aged 56; died, August 21.

Anton Carl Klamt, Chicago; Northwestern University Medical School, Chicago, 1912; aged 56; died, September 4, of coronary occlusion.

James Bray, Toronto, Ont., Canada; M.B., University of Toronto Faculty of Medicine, 1884, and M.D., 1885; aged 85; died, September 6.

Martin Van Buren Fried Turley, Tracy, Calif.; Central College of Physicians and Surgeons, Indianapolis, 1885; aged 82; died, July 28.

Daniel Logan Stewart, Thamesville, Ont., Canada; Western University Faculty of Medicine, London, 1916; aged 47; died, August 20.

James Edmund Mabee, Odessa, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1887; aged 89; died, August 20.

Eathan Henry Marcellus, Iroquois, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1895; aged 67; died, August 31.

Leonard Jennett Simpson, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1907; aged 58; died, August 18.

William Alexander Hargis, Donelson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1892; aged 73; died, August 18.

Solomon Rothman, New York; University and Bellevue Hospital Medical College, New York, 1905; aged 56; died, August 28.

John Joseph Timlin, Old Forge, Pa.; Albany (N. Y.) Medical College, 1888; aged 81; died, August 20, of gastric carcinoma.

Charles Francis Dunfield, Windsor, Ont., Canada; Western University Faculty of Medicine, London, 1911; aged 55; died, August 2.

William E. Gill, Norwalk, Ohio; Pulte Medical College, Cincinnati, 1877; aged 85; died, September 6, of aortic insufficiency.

John Sherman Appleman, Chicago; Bellevue Hospital Medical College, New York, 1885; aged 76; died, September 12.

Carol Thelma Coolidge Stanton, Los Angeles; College of Medical Evangelists, Los Angeles, 1924; aged 40; died, July 18.

William Wesley Fitzgerald ✠ Stockton, Calif.; Jefferson Medical College of Philadelphia, 1895; aged 72; died, July 7.

Jefferson Davis Nifong, Long Beach, Calif.; Beaumont Hospital Medical College, St. Louis, 1893; aged 77; died, July 13.

Felix Tircuit, Marrero, La.; University of Louisiana Medical Department, New Orleans, 1878; aged 90; died, August 14.

John A. Toliver, French Lick, Ind.; University of Louisville (Ky.) Medical Department, 1893; aged 86; died, August 8.

Joseph Desgagne, Bagotville, Que., Canada; Trinity Medical College, Toronto, Ont., 1902; aged 70; died, August 16.

Theodore M. Johnson, West Pittston, Pa.; Hahnemann Medical College of Philadelphia, 1878; aged 86; died, August 20.

Caesar William Sunseri ✠ Steubenville, Ohio; Jefferson Medical College of Philadelphia, 1919; aged 44; died, August 15.

John Samuel Agar, Chatham, Ont., Canada; University of Toronto Faculty of Medicine, 1890; aged 76; died, August 14.

Victor Jacques Jacobsohn, New York; Long Island College Hospital, Brooklyn, 1916; aged 48; died, August 27.

Benjamin Allen Mardis, San Francisco; Cooper Medical College, San Francisco, 1892; aged 70; died, September 3.

Milton Alexander Chaiken, Chicago; Chicago College of Medicine and Surgery, 1914; aged 52; died in September.

John A. Boatman, Middleton, Tenn. (licensed in Tennessee in 1915); at one time mayor; aged 79; died, August 14.

Ira L. Hill ✠ New York; Detroit College of Medicine, 1899; aged 64; died, September 2, at Scarsdale, N. Y.

Lewis Abner Law ✠ Alberta, Va.; Medical College of Virginia, Richmond, 1926; aged 44; died, August 13.

Amelia Mollie Fendler, New York; Woman's Medical College of Baltimore, 1892; aged 70; died, August 4.

Lee B. Epperson, Gurdon, Ark. (licensed in Arkansas in 1903); aged 64; died, August 29, of angina pectoris.

Walter Bernard Schwuchow ✠ Los Angeles; Rush Medical College, Chicago, 1903; aged 62; died, September 3.

Bernard Charles Marantz, New York; Maryland Medical College, Baltimore, 1912; aged 50; died, August 16.

Andrew O'Neill ✠ Uniontown, Pa.; Maryland Medical College, Baltimore, 1904; aged 68; died, August 2.

Benton H. Jones, Harriman, Tenn.; Knoxville (Tenn.) Medical College, 1909; aged 56; died, August 18.

Frances J. Weiser, New York; Long Island College Hospital, Brooklyn, 1924; aged 51; died, August 9.

James P. Rogers, Seymour, Tenn. (licensed in Tennessee in 1912); aged 69; died, September 3.

Joseph D. Ely, Fayette, Ohio; Detroit Medical College, 1884; aged 84; died, August 29.

Marion Hall Lewis, Boston; Boston University School of Medicine, 1895; died, August 1.

Bureau of Investigation

THE VOGUE SPECTACLE COMPANY FRAUD

Chicago Eyesight Swindle Barred from the Mails

Among the cruelest of frauds are those which trifle with the precious organs of sight. Some of these, whether involved in Post Office fraud orders or otherwise, have previously been dealt with in this department of THE JOURNAL. Among them have been "eyesight normalizers," courses in "eye exercises" and simple spectacles-by-mail schemes.

The Vogue Spectacle Company of Chicago was the brain child of one Irving Silvers, who, according to the memorandum on the Post Office investigation, advertised under this trade style the correction of eyesight deficiencies. The alleged simplicity of ordering glasses from him by mail and the pretended benefits to be gained by taking up his "bargain" offer were played up in this specimen advertisement quoted in the memorandum:

FIT YOUR OWN EYEGLASSES FREE

14 TRIAL LENSES FREE! It's easy to fit your own eyeglasses by our simple improved method. Save More Than Half. Read small print—do close work—see far and near without eyestrain. We send you complete eye testers FREE.

(Cut of eyeglasses)

SAVE MORE THAN HALF

(Cut of woman wearing glasses)

Get the 14 trial lenses FREE. Write today.

SEND NO MONEY • 10 DAYS' TRIAL

WEAR VOGUE EYEGLASSES for 10 days. Get more comfort—look distinctive and smart in appearance. Latest styles priced only $3.85 and up. Others as low as $1.98. We guarantee satisfaction or refund money promptly. Broken lenses or frames repaired or replaced at low prices. We will send you FREE 14 trial lenses and illustrations of beautiful distinctive patterns for your selection. We only handle High Grade Single and Double Vision Toric Kryptoc Bifocal Lenses ground into one solid piece of glass.

VOGUE SPECTACLE CO., 3234 Lawrence Ave., DEPT. K90, CHICAGO, ILL."

As the memorandum showed, those who answered received a form letter, printed circular matter, so-called testing charts and two cardboard strips each containing seven pieces of glass to be used by the recipient in testing his eyes in order to determine the particular kind of spectacles needed to correct his vision. The literature, judging from the memorandum's quotations, was the expected claptrap of claims and testimonials and may be passed over without further comment here. The charts for testing the vision consisted of a printed cardboard for close reading and a printed sheet for distance. Also there were elaborate "Directions for Using Eye Tester" by means of two cardboard strip testers, about 9 inches long and 1½ inches wide. As mentioned before, each "tester" contained seven lenses and, of the total fourteen, eleven were plus lenses and three were minus ones.

The foregoing facts were brought out in the memorandum on the case, submitted by Hon. Calvin W. Hassell, Acting Solicitor for the Post Office Department. His report went on to show that two sets of the so-called tester lenses sent out by the Vogue concern to prospective purchasers of spectacles were submitted to the United States National Bureau of Standards for examination and measurement. The expert who measured them is said to have reported that his tests showed that in some instances the lenses were not of the dioptric strength claimed by the promoter, Silvers, or of a uniform strength such as would enable Silvers to determine from the report of the customer's self examination what strength of lens was required. Further, the testimony is said to have shown that a number of the lenses contained in each of the strip testers measured by the Bureau of Standards were so badly centered that their dioptric power could not be measured, and that persons using such devices could not correctly determine or report to the Vogue outfit their selection of lenses according to the instructions. The memorandum showed that twelve persons ranging in age from 24 to 61 years testified as to their self measurement of vision by the "Vogue" system and that all but one or two were unable clearly or comfortably to read the letters on the "Vogue" distance chart at 10 feet while wearing the glasses that the defendant had sold them under the representation that they would correct the purchasers' vision; most of the witnesses testified that the glasses were uncomfortable for close reading.

A special witness for the government at the hearing of this case was Dr. Hollis U. Maness, Passed Assistant Surgeon for the United States Public Health Service, for which agency he specializes in the refraction of eyes and the prescribing of spectacles. Dr. Maness, the memorandum pointed out, had examined the eyes of the witnesses for distance and reading without glasses and had made a similar test with these persons' own glasses, then a third one with the Vogue concern's glasses and a fourth with physicians' regular testing equipment, including the use of test lenses for ordinary hyperopic, myopic, presbyopic and errors of refraction, together with examinations for the detection and correction of astigmatism, as well as appropriate charts for use with these lenses. In most of these tests Dr. Maness employed a cycloplegic. In every instance, he testified, the glasses furnished by the Vogue Spectacle Company were unsuitable for correcting the vision of the users, even those who were able to read the "Vogue" charts, for the continued use of the spectacles would injure their eyesight. The witnesses who had tried these glasses were all found to be suffering from some degree of astigmatism and this condition, Dr. Maness testified, was not one for which they could examine their eyes by means of the test strips sent out by the defendant company. As 85 per cent of all persons with defective vision are, according to Dr. Maness, astigmatic, it is obvious that this percentage of eyesight sufferers is thus eliminated from the possibility of obtaining relief through the defendant's system.

These and many other salient points were brought out in the testimony of Dr. Maness. One such point was the fallacy of the defendant's claim that the glasses he furnished would relieve headaches caused by defective vision, whereas Dr. Maness showed that such headaches may be due to various eye disorders that cannot be determined by the eye testing methods employed in this scheme or corrected by the spectacles furnished on the basis of such tests. He further pointed out the falsity of the claim that persons unable to read all of the printed matter furnished for the so-called preliminary "quick easy test" need glasses. His testimony showed that the eyes may be involved in many conditions such as vitreous opacity, corneal leukoma or central choroiditis, which could not be corrected by use of lenses.

The medical testimony further demonstrated that, although the promoters of the scheme represented that a "10 days trial" would be sufficient time for the prospect to determine whether the eyeglasses furnished him properly fitted his eyes, this period was not, in fact, adequate for the purpose, since spectacles which might feel comfortable for a while and might apparently relieve symptoms of trouble could eventually prove unsuited to the eyes. The evidence showed that the promoter's claim that the customer "cannot lose" was false, since eye injuries which might follow the use of unsuitable glasses certainly must be considered a loss to the purchasers.

Although the defendant's counsel argued that there was conflict between the medical testimony furnished by the government's expert witness, Dr. Maness, and the affidavit supplied for the defendant company's evidence by Dr. Paul K. Anthony of Chicago, it was brought out that Dr. Anthony had admitted that the company in question could not "correctly fit" or furnish "a perfect fit" in glasses to all persons who apply therefor. As Dr. Anthony did not appear at the hearing and thus was not subject to cross examination, little weight was given to any of his "evidence." According to the records of the American Medical Association Dr. Paul Krvavica Anthony was graduated by Loyola University School of Medicine, Chicago, in 1936 and was licensed to practice in Illinois in the same year. He is shown as a member of his local medical society but not as a Fellow of the American Medical Association. It is on record that his name was Paul Anthony Krvavica until he had it changed to Paul Krvavica Anthony by a court order in October

1937. The Post Office memorandum described him as "an oculist in the employ of the respondent." The concern also was said to have engaged the services of an Andrew H. Gosstron, described as an optometrist.

Altogether there was so much evidence to support the solicitor's charge that the business was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises that the Post Office Department, on Oct. 30, 1939, issued the recommended fraud order against the Vogue Spectacle Co., Vogue Spectacle Company and its officers and agents as such.

Correspondence

DIABETES

To the Editor:—In your issue of September 21, Dr. Joslin and his associates have patiently repeated some of the decisive reasons against lax diabetic treatment. Immediately after the discovery of insulin came the first pseudoscientific suggestion of giving enough insulin to provide for metabolism of a requisite amount of food and then letting the patient eat freely without regard to glycosuria or hyperglycemia. I long ago gave up arguments over the persistent repetitions of this error, according to the advice in Proverbs 27:22. As so much of human life and disability are involved, perhaps Dr. Joslin's warning may be reinforced by two summarized case records:

1. A woman aged 55, first seen in 1925, had diabetes, obesity, goiter, hypertension, arteriosclerosis and myocardial degeneration. Diabetes was controlled by reduction of weight from 160 to 140 pounds (from 72.6 to 63.5 Kg.). After five years, onset of hyperthyroidism caused loss of weight to 110 pounds (50 Kg.) and required 20 units of insulin twice daily. Under medical treatment the thyroid intoxication subsided. The patient has consented to avoid fat but has continually transgressed her liberal carbohydrate allowances. Now, weighing 138 pounds (62.6 Kg.), she is only partly sugar free on 104 units of insulin daily. The principal loss of tolerance occurred not with the hyperthyroidism but progressively at other times. She continually complains of pains, weakness and nervous symptoms. She is seen infrequently and consents reluctantly to stricter treatment and increases of insulin because her symptoms are thus definitely relieved.

2. A woman aged 24, seen in 1922, 5 feet 5 inches (165 cm.) tall, had rather mild diabetes and was kept controlled at a weight of 94 pounds (42.6 Kg.) for nearly a year without insulin. She then preferred to gain to 115 pounds (52 Kg.) by taking 24 units of insulin a day. She subsequently gained to 130 pounds (59 Kg.) and required 50 units of insulin daily. Owing to fear of insulin reactions and immunity from diabetic symptoms she departed from the rule of sugar freedom which was maintained prior to insulin. She adopted for herself a plan of convenience which has been endorsed in some clinics, namely that she has glycosuria during the early part of every day. Now, weighing 129 pounds (58.5 Kg.) after years of a low-fat high-carbohydrate diet, she cannot be sugar free with 100 units of insulin daily. Her freedom from discomforts may be explained by her comparative youth, but she has become impressed by the loss of tolerance, so that she may submit to closer supervision.

One man gave me a history of continuous heavy glycosuria for thirty years without treatment or diet restrictions and without any perceptible departure from health, but his ideas were then changed by gangrene. It is thus evident that observations of a few years do not establish the safety of any procedure in a chronic disease. The longest observations in my experience, however, have confirmed the prevention of both progressiveness and complications under strict control. Contrary to Dr. Tolstoi's recent statement, there has been no change whatever since 1914 in the orthodox ideal of restoring the diabetic as nearly as possible to normal. Abundant testimony from that time to the present establishes this method at least as safe and dependable.

It seems demonstrable that the harm from inadequate treatment is not limited to loss of tolerance. Also it would be wrong to interpret Dr. Joslin's criticism as applicable to only one individual or institution. In an address before the Renziehausen Foundation in Pittsburgh (Feb. 2, 1940) I mentioned that among the large institutions to which the general medical profession looks for guidance there is a record of ignorance or disregard of proved facts, fads and guesswork announced as brilliant new discoveries and recklessly applied in therapy, exaggerations of the dangers of hypoglycemia, teachings of the necessity or desirability of high blood sugar especially among groups such as cardiac or elderly patients, and unproved claims that certain overbalanced diets will obviate the harmful effects of poorly controlled diabetes on the blood vessels or general system.

The recent confirmation of the undernutrition principle by Dr. Best is not accidental, because the original conclusions were based on scientific proof. Dr. Tolstoi's communication in THE JOURNAL of October 12 clearly illustrates how institutions which supposedly stand for science actually practice empiricism. But if an unproved method is to be substituted for a known safe one, to see how it will turn out in practice, it should at least be tried cautiously and within limitations. It is morally indefensible to make wholesale trials on human beings, risking the chance that in twenty years they may prove to have been disastrously mistaken. Also, on this very point of clinical experience, it is noticeable that Joslin's comprehensive long-time statistics have been allowed to stand alone, and the persons and institutions having the greatest material and means for supporting their therapeutic claims by comparable figures have for some reason refrained from doing so. Two statements seem warranted: First, the example of the largest institutions has encouraged laxity among physicians and indirectly among patients. Second, diabetic patients treated just sufficiently to keep them out of acute trouble for a few years constitute the reservoir from which are drawn the great mass of the complications which cause most diabetic deaths today.

I was the first to state that diabetes is not inherently progressive, and also to set up the ideal of normal blood sugar as an index of thorough control of the disease and relief of pancreatic overstrain. As late as 1936 I found myself assigned to a five minute discussion on a program (*Bull. New York Acad. Med.* **12**:309, 1936) occupied by speakers from large institutions who unanimously rejected this standard. The adoption by Marks (*M. Clin. North America* **24**:649 [May] 1940) of the precise principles and method which I have so long advocated seems to represent a reform in a place where it was as much needed as in the place mentioned by Dr. Joslin. Hyperglycemia must denote an insulin deficit, because it is absent in the normal individual on an identical diet. I have shown that after glycosuria is stopped the amount of extra insulin required to reduce a high blood sugar to normal may be as much as 20 units a day. An important service of modern medicine has been to devise tests for detecting slight deficiencies of vitamins or other food materials and likewise of all endocrine glands and to correct these deficiencies. The sole exception pertains to one of the most vital endocrine products, namely insulin, and it is amazing that there should have been such widespread advocacy of ignoring this manifest deficiency as harmless. Furthermore, it is no more difficult to

treat ordinary cases strictly and keep watch against hyperglycemia than it is to treat them inefficiently and keep watch against dangerous emergencies. Diabetic deaths can be greatly reduced by copying the code of surgeons, namely that both immediate and remote results should be demonstrated and that the practice is open to any physician qualified to produce results up to the accepted standard.

FREDERICK M. ALLEN, M.D., New York.

MYASTHENIA GRAVIS

To the Editor:—In the correspondence columns of THE JOURNAL, September 7, page 876, are communications from Drs. Henry R. Viets of Boston and Leo D. Freydberg of Granville, N. Y., commenting on the report of a case of myasthenia gravis which I made in THE JOURNAL, July 13, page 123. This gives me opportunity to clarify certain points, as well as to report further progress of the case. Unfortunately for the patient, but fortunately for me, he had a mild return of symptoms at an opportune time.

Concerning the use of quinine, I accept the criticisms of Drs. Viets and Freydberg; their comments may serve to emphasize its contraindications in this condition. The unpleasant effects noted after two days of therapy were nausea, vomiting and ringing in the ears.

Dr. Viets stated that the symptoms as given were consistent with the diagnosis but that it was not clearly indicated that the patient had the primary symptoms of myasthenia gravis, namely fatigue on muscular motion with recovery after rest. This was indicated in the following: "Paresis of the pharyngeal and laryngeal muscles produced a nasal, higher pitched voice, and talking was a decided effort, requiring frequent intervals of rest to avoid development of a whisper. . . . He was able to say but a few words at a time and then had to wait a few minutes before resuming." The weakness of the muscles, always associated with effort followed by recovery on rest, was an outstanding symptom.

On recurrence of his symptoms ten months later he was given 1 cc. of 1:2,000 prostigmine methylsulfate, and he stated that relief of muscle fatigue of the neck and shoulders was noticeable in about twenty-five minutes. The diagnosis of myasthenia gravis was in my opinion such an obvious one that tests such as the reaction of Jolly were not required. Furthermore, according to Wechsler (Text Book of Neurology, ed. 3, Philadelphia, W. B. Saunders Company, 1935, pp. 204-205), the reaction may occur in normal persons and is frequently absent in myasthenia gravis; so its value apparently is not great. The weakness of the muscles after the initial effort of contraction was apparent, as was the recovery with rest.

On Aug. 20, 1940, there was a mild return of symptoms. The blood chlorides at this time were 462 mg. of the total chlorides as sodium chloride per hundred cubic centimeters of blood and blood creatinine 2.2 mg. per hundred cubic centimeters of blood. It will be recalled that the patient is a physician and at my request he commented on the progress of his case:

> The onset of symptoms was so insidious for from ten to fourteen days that the patient failed to realize the exacerbation of his disease of nearly ten months before. The main symptom was a sensation of heaviness of the head due to fatigue of the neck and shoulder girdle muscles. This was noted within a few minutes of sitting or standing and was relieved shortly after lying down. Prolonged effort merely accentuated the fatigue of the neck and shoulders to the point of an aching pain which required longer rest for relief. Climbing stairs induced a slight to moderate dyspnea. The patient also noted a desire to take naps and sleep longer hours, which he ordinarily never required or indulged in. In other words, at the time of reporting back to Dr. Moehlig his symptoms were not nearly so many or marked as with the initial attack. They were identical, however, as to the insidious onset in muscles supplied by the cervical plexus, induction with minimal effort, immediate relief on rest, plus an afebrile course with no early gastrointestinal signs or symptoms.
>
> It was decided to give the patient a daily dose of 10 mg. of desoxycorticosterone acetate subcutaneously. For the next week he noted a gradual daily increase in the foregoing symptoms, with beginning anorexia and a loss of faculty to perspire. General weakness increased and the patient voluntarily increased his desoxycorticosterone acetate dose to 10 mg. twice daily. This seemed to just about hold the disease stationary—without improvement. The patient observed, as previously, relief of the neck and shoulder fatigue in about two hours after the injections, and this would last for approximately six hours before he felt poorly again.
>
> Needless to say, the patient was depressed by his recurrence and the prospect of being forced to stop working. He fully appreciated, however, the dramatic and complete prolonged relief of severe symptoms which had followed the previous implantation of desoxycorticosterone acetate. Reading everything procurable on the disease, the physician-patient could easily and early place his syndrome as being that of a typical classic myasthenia gravis. In addition, perusal of the irregular and transitory results of other types of therapy further convinced him of the clinical excellence of desoxycorticosterone acetate implants.
>
> The patient was further encouraged by the following practical observations: The implantation had been performed by placing two unbroken and one inadvertently crushed pellets (totaling 450 mg.) into an abdominal skin and subcutaneous incision. For several months this presented a broad, thin, slightly reddened and elevated, tender scar, typical of an underlying foreign body reaction. In retrospect, the sudden dramatic and continued rapid improvement six days after operation presumably was due to the crushed powdered tablet. The two remaining pellets began to be palpable after a few months. The patient commented that these were becoming more superficial and more easily palpable as time went on, and he thought they were going to extrude themselves gradually. Beginning two months ago, however, the skin scar gradually became white, retracted and insensitive, instead of red, elevated and tender. After a few more weeks recurrence of symptoms began to develop. Obviously all this points strongly to a scar tissue reaction about the pellets, delaying and decreasing absorption of the active substance.

On August 27, ten months since the implantation (Oct. 28, 1939), the scar and subcutaneous tissue containing the pellets was excised. On section two pellets were found; the third which had been broken was completely absorbed. The pellets were about one third their original size and each firmly and completely encapsulated within a cicatrix. The pellets weighed approximately 50 mg. each and since they originally weighed 150 mg., each gave up a total of 100 mg. In the period of 300 days the daily absorption rate was approximately 0.3 mg. per pellet. This corresponds with the observations of Thorn and his associates (Thorn, George; Howard, R. P.; Emerson, Kendall, Jr., and Firor, W. M.: Treatment of Addison's Disease with Pellets of Crystalline Adrenal Cortical Hormone [Synthetic Desoxycorticosterone Acetate] Implanted Subcutaneously, *Bull. Johns Hopkins Hosp.* **64**:339-366 [May] 1939) of an absorption rate of from 0.25 to 0.3 mg. a day. The two pellets plus two additional ones of 150 mg. each (total 400 mg.) were implanted subcutaneously into the abdominal wall.

The laboratory report on the excised tissue was as follows:

> Tissue consists of skin and subcutaneous tissue which included two areas of scar tissue. Microscopic diagnosis: Subcutaneous scar tissue. There is an area of low grade inflammation apparently encapsulating the foreign body.—Plinn F. Morse, M.D.

It has now been fourteen days since the patient was operated on. He continued to take 20 mg. of the desoxycorticosterone acetate daily for three days, then voluntarily reduced this to 10 mg. daily for one week, and for the past four days he has had no injections. He states that he is definitely improved, the improvement being particularly noticeable in the past few days. He has been able to carry on his work in the operating room and in practice with but slight distress and no need of rest periods for the past week.

Time will show whether these improvements were due to the long arm of coincidence or to the therapy. I appreciate the criticisms of Drs. Viet and Freydberg and will conclude with the final paragraph of my paper: "Naturally, further experiences with other patients as well as the continued progress of this patient is desirable before final conclusions concerning lasting benefits are made."

ROBERT C. MOEHLIG, M.D., Detroit.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CAUSES OF HYPOGLYCEMIA

To the Editor:—**A married woman aged 27 has complained for the past two years of blurring of vision, dizzy spells, hunger, sense of anxiety and nervous irritability, sometimes accompanied by nausea prior to her meals. From twenty minutes to one hour after eating she complains of exhaustion, sleepiness, sometimes accompanied by heart palpitation, nausea and vomiting. On occasion she complains of one sided headaches always accompanied by nausea and vomiting and unexplained periods of nausea and vomiting and urinary frequency and urgency lasting for from a few hours to the entire day. She has had a dull aching pain in the left upper quadrant, not constant in character, radiating through to the back and up to the scapula for the past seven years. The patient gives a history of hay fever of seven years' duration with moderate relief with treatment. Physical examination is essentially negative except for transient cardiac arrhythmia with rapid thready pulse on one or two occasions following mental shock. She had no childhood diseases except diphtheria. When an adult, tonsillectomy was performed after a short period of rheumatic arthritis. The patient's blood pressure and temperature are normal. She has maintained her weight throughout this period and feels exceptionally well between these abnormal periods. Examination of the eyes was negative. The urine was normal and the Wassermann reaction negative. The blood count was normal. The chest x-ray examination gave normal results. The basal metabolism was —5. The electrocardiogram was negative, taken one year prior to the cardiac arrhythmia. Gallbladder x-ray examination was negative. Gastrointestinal x-ray films were negative except for chronic appendicitis. The dextrose tolerance test was as follows:**

	100 Gm. of Dextrose		25 Gm. of Dextrose
Before meals	80.6	85	95.2
One hour after	64.3	49.1	59.7
Two hours after	Not taken	99	78.1
Three hours after	70.7	99	88.9

Do you believe that this case of hyperinsulinism is due to neurosis, allergic phenomena, neoplasm of the pancreas or simple dysfunction? What suggestion can you offer as to diagnosis and treatment?

M.D., New York.

ANSWER.—It must be remembered that not all cases of hypoglycemia are due to hyperinsulinism. The differential diagnosis of hypoglycemia is fraught with difficulty. Apart from the pancreatic causes one must consider pituitary disease, adrenal disease and extensive liver disease in which there is failure to store glycogen. None of these seem to fit well into this picture but they should be carefully ruled out. Mild hypoglycemia also accompanies autonomic imbalance (vagotonia).

The case described shows numerous departures from the usual pattern. One of these departures is the dextrose tolerance curve. The typical "hyperinsulinism" curve usually starts from a fasting level of 60 mg. or less per hundred cubic centimeters. It rises during the first hour and then falls below the fasting level. The curve shown by this patient is known as a "reverse tolerance curve." That is to say, the curve falls immediately after the ingestion of dextrose and later returns to or near the fasting level. Less, if possible, is known about such a reaction than is known about "spontaneous hypoglycemia." Another departure from the usual pattern is the failure of food to relieve the symptoms. As a matter of fact, the ingestion of food seems to accentuate the symptoms. It would be helpful to know the blood sugar level in this patient during an attack. The effect of epinephrine in overcoming attacks should also be investigated.

If liver damage, pituitary disease and adrenal disease can all be eliminated in this case, one must still differentiate between pancreatic hypoglycemia and that due to neurogenic causes, and this is extremely difficult. Because of the atypical circumstances pointed out, the weight of evidence seems to favor a neurogenic cause. The hypothesis has been advanced that these neurogenic cases are due to an overreaction of the pancreas to the stimulation of dextrose. On this basis it has been suggested that frequent feedings low in carbohydrate and relatively high in protein would tend to lower this stimulation.

As a rule the diagnosis of pancreatic neoplasm cannot be confirmed except by exploratory operation. This would not seem justified in the present case until all other efforts had failed to solve the problem.

ACTION OF "STAINING" ANTISEPTICS

To the Editor:—**Is there any difference in antiseptic value between two solutions of proved equal potency in vitro if one stains the tissues with which it comes in contact and the other does not? Does the staining substance enter into chemical combination with the tissue proteins? If it does, is there any greater danger of sensitization with the use of such a substance? Is a nonstaining solution absorbed to as great an extent as is a staining solution?**

Seymour Schuback, M.D., New York.

ANSWER.—There are many sorts of stains used in the preparation of antiseptic solutions. Some of them have of themselves germicidal action but others have virtually none. They usually are added by manufacturers in order to delimit more clearly the area of skin being treated rather than to increase the bacteriostatic or bactericidal effect. It certainly cannot be assumed that addition of a stain necessarily increases the disinfectant power of any antiseptic solution.

Effective disinfection of tissues is primarily a problem (1) of employment of a potent agent and (2) of adequate contact between bactericide and bacteria. In standard in vitro tests, optimal and uniform conditions for such contact may obtain. But on skin and mucous membranes and in wounds contact with the bacteria present is an uncertain matter. Staining of tissues by no means assures that the solution has made contact with all the micro-organisms harbored there. Another factor, too often overlooked, is the degree to which tissues or their secretions combine with the chemical disinfectant so as to lessen its germicidal action. Thus on theoretical grounds, under certain conditions, it is conceivable that of "two solutions of proved equal potency in vitro" the one which stains the tissues might at the same time be "fixed" or otherwise neutralized in part by them, so as to become actually less effective as a disinfectant than the other solution.

Chemical "combinations" of stains with live tissues is a complex matter as yet incompletely understood. They involve "reactions" between substances whose chemical structures often are not fully known. Even more obscure is the chemistry of "sensitization." The answer to the question of whether there is greater danger of sensitization with the use of antiseptics which stain must be sought rather in the clinical experience of the profession. So far as known, no evidence has been accumulated to show that any degree of sensitization is attributable to staining properties of germicidal solutions. Untoward reactions are probably more often due to the chemical germicide itself, whether it discolors the tissues or not, rather than to any stain that may have been added to it. And it is doubtful whether staining of tissues is a dependable index of "chemical combination with the tissue proteins," absorption of the antiseptic or "danger of sensitization."

VITAMIN B_1 IN CARDIOVASCULAR AND GASTROINTESTINAL DISORDERS

To the Editor:—**Has any clinical work been done to evaluate the use of vitamin B_1 in improving heart conditions, and vitamin B complex in functional stomach disorders? What is the value of these products in these specific conditions?**

Irwin I. Lubowe, M.D., New York.

ANSWER.—Clinical studies of the effect of vitamin B_1 on cardiovascular disturbances in specific thiamine deficiency have been reported by Weiss and Wilkins, Jolliffe and Goodhart, Strauss and others. There is considerable evidence which indicates that the various members of the vitamin B complex have a definite function in gastrointestinal motility, and it is probable that a lack of either nicotinic acid or thiamine hydrochloride, or other unknown factors, is important in the development of certain functional digestive disorders. The literature concerning the relationship of the vitamin B complex to gastrointestinal malfunction has been reviewed by Chesley, Dunbar and Crandall and by Borsook and his co-workers.

References:

Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), *Ann. Int. Med.* **11**: 104 (July) 1937.

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Strauss, M. B.: Therapeutic Use of Vitamin B_1 in Polyneuritis and Cardiovascular Conditions: Clinical Indications, THE JOURNAL, March 26, 1938, p. 953.

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Borsook, Henry; Dougherty, Paul; Gould, A. A., and Kremers, E. D.: The Vitamin B Complex and Functional Chronic Gastrointestinal Malfunction: A Study of 227 Cases, *Am. J. Digest. Dis.* **5**: 246 (June) 1938.

HEMOGLOBIN ESTIMATIONS

To the Editor:—**What is the most generally accepted normal figure for hemoglobin in the blood? Some systems figure 13.8 Gm. per hundred cubic centimeters of blood, others 14.5, some 16 and 17. This is confusing, especially since many physicians speak of it in terms of percentage and not in grams.** J. Street Brewer, M.D., Roseboro, N. C.

ANSWER.—In making hemoglobin estimations the most important point is to determine the mean number of grams per hundred cubic centimeters on the basis of 5,000,000 red cells. Several such studies have been made in this country. Osgood found 14.29 Gm., Wintrobe 14.25 Gm. and Haden 15.38 Gm. It is possible that the amount varies in different sections of the United States. Since laboratory workers are not agreed on one figure for the normal amount of hemoglobin per hundred cubic centimeters of blood with a count of 5,000,000 red cells it is best to estimate the amount to be used for each laboratory. The standard is easily determined by estimating the hemoglobin in grams and counting the red cells in at least ten normal adults. The following example illustrates such a calculation:

Number	Red Cell Count per Cubic Millimeter (Millions)	Hemoglobin per 100 Cc. of Blood (Grams)
1	5.02	15.5
2	4.00	12.6
3	4.65	14.9
4	5.50	16.8
5	4.78	15.0
6	4.57	14.2
7	4.25	13.5
8	5.31	16.5
9	5.80	16.9
10	4.92	15.1
Mean	4.88	15.1

The hemoglobin in grams per hundred cubic centimeters of blood calculated for a count of 5,000,000 red cells is $\frac{5.00 \times 15.1}{4.88}$ = 15.4 Gm.

This figure will give a color index within normal limits in normal persons for the laboratory in which it is determined.

DOES CORAL GROW IN HUMAN TISSUE?

To the Editor:—**The beaches in the vicinity of Honolulu are filled with coral mixed with sand. This coral is thrown up by the waves, and naturally a considerable amount gets into the ears of bathers. Most persons do not notice the presence of the coral in the ears for periods ranging from one week to several weeks and the first complaint is pain in the ear and a whitish discharge. When the ear is examined, small coral growths are noted. The canal itself is not particularly inflamed but is swollen and macerated. I have seen growths of coral formation about the size of half a dime (5 mm.) and branching in coral formation along the canal. It is my impression that this coral grows in the canal, for after apparent cure from treatments given the condition recurs without the patient having been in bathing again. I have found that the milder forms of treatment such as warm boric acid irrigations followed by phenol and glycerin are of more benefit than the more aggressive treatments. In this connection also I have heard of several cases on the islands of coral growing in the tissues of persons who have had coral lacerations and abrasions after the wounds have apparently healed. I can find nothing in the standard books on this subject but am informed that this does occur and that, if the coral gets into the bony structure, quite a serious condition results. Can you give me any information regarding such a possibility? I have also been informed on numerous occasions that one should never use tincture of iodine on coral inflicted wounds. The reason is given that the animal life producing the skeletal coral grow or feed on the iodine content of the sea water and therefore iodine enhances the growth of the animal rather than inhibits it. Is there any truth in this assertion and if so what would be the accepted form of treatment of coral wounds?** M.D., Pearl Harbor, T. H.

This inquiry was referred to Dr. Nils P. Larsen, medical director of the Queen's Hospital, Honolulu, who replied as follows:

ANSWER.—This old Hawaiian superstition is believed by certain natives and is often repeated but it lacks foundation in fact. In my eighteen years at the Queen's Hospital we have performed more than 300 autopsies a year but have failed to see anything of this nature. As a hobby I have taken up diving and underwater photography and have been down on the coral beds in every part of this island and three other islands. I don't believe there is a variety of coral that grows in Hawaiian waters on which I have not been cut and scratched. In one accident I fell into one of the big coral trees in Kaneohe Bay and had cuts the entire length of my body from my ankles to my forehead. In that particular bay every coral cut raises a deep red welt. This condition, however, clears in twenty-four hours. Considering the extreme differences of metabolism, growth and type of animal between coral and man, the statements recall that of the young botanist who thought dandelions could be grafted on apple trees.

The reason for the old Hawaiian superstition about coral growing in a patient I believe comes from the natives seeing sequestrums come from cases of osteomyelitis. Since nearly all patients here with osteomyelitis usually get their cuts in connection with the sea, and since in every part of the sea there is coral, when they saw an irregular piece of bone escape from a wound and the leg was greatly swollen it would be easy to think that it was actually coral growing in the wound.

RECURRENT CANCER OR SURGICAL ELEPHANTIASIS

To the Editor:—**A woman eight years ago had a radical operation for cancer of both breasts. About six weeks ago her right arm, shoulder and right side of the chest became swollen. Careful examination and roentgenograms showed no malignant growth and the diagnosis was lymphangiectasis. There has been no improvement during this period and the arm is uncomfortable at all times and especially when an attempt is made to use it. Even the hand becomes swollen and bluish. Can you suggest any treatment?** M.D., California.

ANSWER.—The question arises as to whether the edema of the arm in the case described is due to recurrent disease along the axillary vein or whether the condition is an example of elephantiasis chirurgica. The negative clinical and x-ray observations constitute evidence against but do not totally exclude recurrent disease as a causative factor. If recurrent disease along the axillary vein is demonstrated or suspected, radiation therapy is indicated and offers some hope of relief. The treatment of elephantiasis chirurgica presents great difficulties and on the whole has been unsatisfactory. Handley recommends lymphangioplasty in certain cases. It has been suggested recently that small doses of x-rays over the arm have given improvement, but these observations have not yet been confirmed. Application of heat gives only occasional and temporary relief. Elevation of the arm is helpful.

MECHANICAL AND MALARIAL FEVER THERAPY IN SYPHILIS

To the Editor:—**Do the diathermy heat treatments give better results than malaria fever treatments in cases in which the spinal Wassermann reaction is positive? Is it advisable to use fever treatments in cases in which the spinal Wassermann reaction is negative but the blood Wassermann reaction remains positive despite antisyphilitic treatment?** Arthur Leistyna, M.D., Ilion, N. Y.

ANSWER.—A recent survey by a subcommittee of the Cooperative Clinical Group of the value of fever therapy administered by malaria and by mechanical means will appear in print shortly. The study showed that the results from the machine therapy and from malaria were practically the same in a group of patients with dementia paralytica. Each method of treatment has certain advantages over the other, which, however, tend to offset each other so that the final results are much the same.

The use of fever therapy is indicated for patients with neurosyphilis who present clinical signs of nervous system involvement or who have a positive spinal fluid test. The patient with clinical neurosyphilis, when the signs are suggestive of dementia paralytica or when the results of chemotherapy are not satisfactory, should be given the advantage of fever therapy immediately. If the patient has no clinical signs of neurosyphilis but has a positive spinal fluid test (especially if it has paretic characteristics) a course of fever therapy may be given when two sources of chemotherapy have failed to improve the spinal fluid reaction. Fever therapy is not indicated for patients who have latent syphilis with a persistantly positive Wassermann or flocculation reaction of the blood.

EOSINOPHILIA WITH GASTROINTESTINAL SYMPTOMS

To the Editor:—**The answer to the question "Eosinophilia with Gastrointestinal Symptoms" (The Journal, September 21, p. 1041) reasonably suggests the possibility of an allergic etiology. The existence of an allergic mechanism—probably of food sensitivity—is quite likely in this particular instance. I have studied a number of allergic children with gastrointestinal symptoms due to food allergy (Roentgen Studies of Children with Alimentary Disturbances Due to Food Allergy, *Am. J. Dis. Child.* 54: 1239 [Dec.] 1937). Gastric retention of varying degrees in association with pylorospasm were characteristic. These observations parallel those of the inquirer in the query in question. The recurrent (periodic) nature of the patient's attacks, consisting of abdominal pain and protracted vomiting, again suggest a possible food sensitivity. Dr. Kenneth G. Jennings and I are publishing observations made on a group of children suffering from recurrent attacks of vomiting abdominal pain which would seem to be similar to the attacks of this patient (Recurrent Vomiting in Children: The Factor of Food Hypersensitiveness, *J. Pediat.*, to be published). A more careful inquiry into the patient's diet with particular emphasis on possible food sensitivities might be revealing.**

Joseph H. Fries, M.D., Brooklyn.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, October 19, page 1394.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 17-19. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Regular.* Little Rock, Nov. 7-8. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Dec. 11. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * *Written.* Hartford, Nov. 12-13. *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* Derby, Nov. 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: July 8-10. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: * Tampa, Nov. 18-19. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

HAWAII: Honolulu, Jan. 8-11. Sec., Dr. James A. Morgan, 48 Young Building, Honolulu.

INDIANA: Indianapolis, June 17-19. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, Citizens Trust Bldg., Fort Wayne.

IOWA: Des Moines, Dec. 9-11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 10-11. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 3-5. Sec., State Board of Health, Dr. A. T. McCormack, 620 Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 29-31. Sec., State Board of Health, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.

MONTANA: *Reciprocity.* Helena, March 31. *Written.* Helena, April 1. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA:* Lincoln, Nov. 7-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEVADA: Reciprocity with oral examination, Nov. 4. Sec., Dr. Fred M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 13-14. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 27-30. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity.* Durham, Dec. 10. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, Dec. 9-12. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: * *Reciprocity.* Portland, October. *Written.* Portland, Jan. 14-16. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Miss Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 21-22. Dir., Medical Licensure, Dr. J. F. D. Cook, Pierre.

TEXAS: Austin, Nov. 25-27. Sec., Dr. T. J. Crowe, 918-920 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 4-6. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Morgantown, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: * Madison, Jan. 14-17. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

MICHIGAN: Ann Arbor, Detroit and East Lansing, Feb. 14-15. Sec., Miss Flora E. Dube, East Lansing.

OKLAHOMA: Oklahoma City, Nov. 18. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City.

RHODE ISLAND: Providence, Nov. 20. Acting Chief, Division of Examiners, Mr. E. Clyde Thomas, 366 State Office Bldg., Providence.

SOUTH DAKOTA: *Examination.* Yankton, Dec. 6-7. *Endorsement.* Dec. 21. Sec., Dr. Gregg M. Evans, Yankton.

WISCONSIN: Milwaukee, Dec. 7. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Arizona July Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination for medical licensure held at Phoenix, July 2-3, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Four candidates were examined, three of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Tulane University of Louisiana School of Medicine		(1936)	1
University of Nebraska College of Medicine		(1939)	1
University of Tennessee College of Medicine		(1939)	1

School	FAILED	Year Grad.	Number Failed
St. Louis University School of Medicine		(1938)	1

Ohio June Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports the oral, practical and written examination for medical licensure held at Columbus, June 3-6, 1940. The examination covered eleven subjects and included eighty questions. An average of 75 per cent was required to pass. Two hundred and sixty candidates were examined, 253 of whom passed and seven failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School		(1940)	81.8
George Washington University School of Medicine		(1939)	82.2
Loyola University School of Medicine		(1940, 2)*	82.1
Northwestern University Medical School		(1940)	82.3
Rush Medical College		(1939)	86.3
University of Kansas School of Medicine		(1938)	84.1
Johns Hopkins University School of Medicine		(1924)	83
Harvard Medical School		(1935)	85.7, (1936) (1938) 84.6, (1940) 85.1
University of Michigan Medical School		(1939)	80.7
Washington University School of Medicine		(1938)	85.1
Creighton University School of Medicine		(1939)	80.8, 81.1, 82.4
Cornell University Medical College		(1937)	86.6, (1938) 83.1
New York University College of Medicine		(1939)	82.6
University of Rochester School of Medicine and Dentistry		(1939)	83.3
Ohio State University College of Medicine		(1939)	80.5, (1940) 76.7, 77, 77.2, 78.5, 78.5, 78.6, 79.6, 80.1, 80.3, 80.5, 80.7, 80.8, 80.8, 81, 81.4, 81.5, 82, 82, 82, 82, 82, 82.1, 82.2, 82.2, 82.3, 82.3, 82.3, 82.6, 82.7, 82.8, 82.8, 83, 83, 83, 83.2, 83.3, 83.4, 83.4, 83.5, 83.5, 83.6, 83.7, 83.7, 83.7, 83.8, 84, 84, 84.2, 84.3, 84.5, 84.5, 84.5, 84.6, 84.6, 84.7, 84.7, 84.7, 84.7, 84.8, 85, 85.1, 85.1, 85.3, 85.4, 85.5, 85.5, 85.7, 85.8, 85.8, 86.1, 86.1, 87, 87.2, 87.5, 88.3, 88.4
University of Cincinnati College of Medicine		(1940)†	75, 75.1, 76.5, 76.6, 77.1, 78.1, 78.6, 79, 79, 79.2, 79.3, 80, 80, 80.1, 80.1, 80.2, 80.5, 80.5, 80.5, 80.6, 80.6, 80.6, 80.6, 80.7, 80.8, 80.8, 81.1, 81.1, 81.1, 81.2, 81.4, 81.5, 81.5, 81.5, 81.5, 81.5, 81.7, 81.8, 82.1, 82.3 82.3, 82.3, 82.3, 82.4, 82.4, 82.5, 82.5, 82.8, 82.8, 83, 83, 83, 83.3, 83.4, 83.5, 84. 84.1, 84.1, 84.2, 84.3, 84.3, 84.4, 84.5, 84.5, 84.6, 84.6, 84.6 85, 85.4, 85.5, 85.7, 85.7, 86.3, 86.6, 87, 87.8
Western Reserve University School of Medicine		(1940)	76.6, 78.1, 78.4, 78.4, 78.5, 78.7, 79.2, 79.8, 80.6, 80.8, 80.8, 81, 81.2, 81.2, 81.5, 81.8, 82, 82.3, 82.4, 82.5, 82.6, 82.6, 82.7, 83.1, 83.2, 83.3, 83.4, 83.5, 83.7, 83.7, 83.7, 83.7, 83.8, 83.8, 84.1, 84.3, 84.5, 84.5, 84.5, 84.6, 84.6, 84.8, 84.8, 85.1, 85.1, 85.2, 85.3, 85.5, 85.5, 85.6, 85.7, 85.8, 86.3, 86.7, 87.3, 87.4, 87.5, 88
Jefferson Medical College of Philadelphia		(1939)	81, (1940) 83.3, 84, 86.4
University of Pennsylvania School of Medicine		(1940)	79.7
University of Pittsburgh School of Medicine		(1937)	84.3
University of Wisconsin Medical School		(1939)	84
University of Toronto Faculty of Medicine		(1939)	81.6, 83.5
McGill University Faculty of Medicine		(1931)	84.8
Medizinische Fakultät der Universität Wien		(1908)	76.8, (1913) 82.1, (1917) 76.5, 81.5, (1922) 76.4, (1920) 80.1, (1927) 82.4
Deutsche Universität Medizinische Fakultät, Prag		(1911)	80.6
Université de Montpellier Faculté de Médecine		(1933)	77.5
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn		(1919)	80.2
Magyar Királyi Ferencz József Tudományegyetem Orvostudományi Kara, Szeged		(1934)	79.4

School	FAILED	Year Grad.	Number Failed
Medizinische Fakultät der Universität Wien		(1908), (1916)	2
Albert-Ludwigs Universität Medizinische Fakultät, Freiburg		(1912)	1
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1914)	1
Universität Heidelberg Medizinische Fakultät		(1912), (1921)	2
Regia Università degli Studi di Modena. Facoltà di Medicina e Chirurgia		(1934)	1

* These applicants have completed four years' medical work and will receive the M.D. degree on completion of internship. Licenses have not been issued.

† These applicants have received the M.B. degree and will receive the M.D. degree on completion of internship.

Book Notices

The Louse: An Account of the Lice Which Infest Man, Their Medical Importance and Control. By Patrick A. Buxton, M.A., M.R.C.S., L.R.C.P., Director, Department of Medical Entomology, London School of Hygiene and Tropical Medicine, London. Cloth. Price, $3. Pp. 115, with 28 illustrations. Baltimore: William Wood & Company, 1940.

The existence of war conditions makes more important than previously complete information regarding the dissemination of lice of the body, the head and the pubis, and also of methods of prevention and control. The little book by Dr. Buxton is probably the most complete available and is certainly an authoritative contribution. It covers every aspect of the subject and in the appendix provides details of the technic to be used in research as well as a complete bibliography and a good index.

Cancer in Childhood and a Discussion of Certain Benign Tumors. Edited by Harold W. Dargeon, M.D., F.A.A.P., Attending Pediatrician, Memorial Hospital for Cancer and Allied Diseases, New York. Cloth. Price, $3. Pp. 114, with 51 illustrations. St. Louis: C. V. Mosby Company, 1940.

This is a symposium on neoplastic diseases of children. It is a collection of papers which have been previously published almost entirely in the *Journal of Pediatrics* by various members of the staff of the Memorial Hospital and represents the experiences at this hospital for cancer and allied diseases. The book is introduced by two chapters which relate to the general aspect of childhood cancer and serve to unify an otherwise disjointed array of material. The first chapter is written by James Ewing and includes a review of those features of cancer peculiar to the young together with a concise survey of various related subjects. The chapters on the whole are brief and include, in addition to the first two, sections on tumors of bone, the leukemias and allied diseases, genito-urinary cancer, gynecologic cancer, cancer of the head and neck, and blood and lymph vessel tumors. Lack of balance, frequently encountered in symposiums, and cursory treatment of the subject matter is observed in some of the sections. For example, the chapter on bone tumors, which stresses the importance of x-ray examinations, contains no reproductions of roentgenograms although more than fifty illustrations are included in the book. The chapter on tumor of the soft somatic structures, however, deserves commendation for its careful arrangement and lucid presentation. Of special interest to the pediatrician will be the tables presenting mortality statistics of the U. S. Department of Commerce and of the Bureau of Records of New York City. These show definitely that cancer is one of the important diseases of children. Additional data contained in the book lend further emphasis to such a conclusion. Although the book cannot be considered a complete treatise on cancer in children, considerable valuable information is presented.

The Hypothalamus and Central Levels of Autonomic Function. Proceedings of the Association, December 20 and 21, 1939, New York. Editorial Board: John F. Fulton, M.D., Chairman, S. Walter Ranson, M.D., and Angus M. Frantz, M.D. Research Publications, Association for Research in Nervous and Mental Disease, Volume XX. Cloth. Price, $10. Pp. 980, with 319 illustrations. Baltimore: Williams & Wilkins Company, 1940.

In this volume are collected papers reported before the Association for Research in Nervous and Mental Disease. The subject of the hypothalamus is considered under the three headings anatomy, physiology and clinical. In the first part an anatomic atlas is included which should be invaluable for all workers in the field. The first and second portions are complete and summarize all that is really known on the subject. The third part is the weakest and cannot be compared favorably with the remainder of the book. A concise survey of the clinical syndromes cannot be obtained from this work and must be searched for elsewhere. The bibliography is extensive and satisfactory. There is an excellent index which makes the book an adequate tool for the investigator. The editorial board is to be congratulated for a brilliant collection of summarizing papers from which subsequent investigators may take off for further advances on the subject.

Traité de l'immunité dans les maladies infectieuses. Par le Dr Jules Bordet, Directeur de l'Institut Pasteur de Bruxelles. Second edition. Paper. Price, $3.90. Pp. 879. Paris: Masson & Cie, 1939.

The first edition of this valuable textbook on immunity appeared about 1920. Besides being brought entirely down to date, the volume has acquired 160 additional pages. The reference publications cover both those of the Old and those of the New World, attesting the author's broad acquaintance with the literature. The introduction points out that life is maintained by an equilibrium continually menaced in which correlation of functions is rarely perfect but defects are corrected by various phenomena of adaptation. Immunity in its various aspects is analyzed and its importance in the progress of science pointed out.

The book is divided into four appropriate parts: The first considers generalities such as infection and the factors of virulence, taking up variously the nature and properties of microbial poisons, endotoxins, anatoxins, vegetable toxins, animal poisons and the mechanism of intoxication, followed by variations of virulence, variations, R and S inequalities, variabilities of metabolism and the origin of virulence; then the circumstances favoring infection; the penetration of microbes and extension of infection covering contagiousness, portal of entry, penetration of toxins, organotropy and cytotropy, incubation, latent microbialism and inapparent infections; included next are the causes of death, specific and nonspecific; then natural and acquired immunity are appropriately considered with age, species, heredity and individual chemical differences as well as the part played by inflammation and phagocytoses, the various phases of vaccination in the mechanism of acquired immunity, with the significance of passive and active immunity, detailed to the role of the placenta and milk. Allergy, anaphylaxis and hypersensitiveness are detailed under incomplete acquired immunity; finally, the first chapter considers protein therapy and pyretotherapy, with a chapter on the general significance of the phenomenon of immunity. Part 2 dwells on cellular immunity with phagocytoses and resorption; phagocytosis, inflammation, and immunity; the circulatory system and inflammation; the adjuvant factors such as opsonins and exudates are considered appropriately. Part 3 takes into consideration the humoral factors of immunity such as antitoxins and antiferments; the agglutinant, bacteriolytic, hemolytic, precipitant and cytotoxic factors are given full elucidation; antitryptic actions, lysozyme, autolysis, complement fixation, including the serodiagnosis of syphilis, flocculation reactions, haptens and artificial antigens as well as the chemical nature of antibodies are presented; in this part also are given the various theories on the mode of union of antibodies and antigens as well as their specificity; finally, blood groupings and their relations in man and animals are detailed. The fourth main division of the book deals with the exact parts played by immunity in specific diseases and immunity in malignant tumors; finally anaphylaxis and allergy are analyzed into their various phenomena—antianaphylaxis, anaphylatoxins, the role of anaphylaxis in pathology, the character of allergy, the hemorrhagic reactions (Sanarelli, Shwartzman), and finally the significance of allergy and immunity especially in tuberculosis closes this extensive work covering one of the most intricate phases of modern science.

In spite of the voluminous character of this valuable textbook, unfortunately it will suffer the shortcomings of any work in a field undergoing such rapid scientific advances as those occurring in the field of immunology. This will probably be the criticism offered by the investigator; but for a ready reference or a student's textbook in immunology it should fill an important place especially for the scientific and medical scholar able to read French fluently. Illustrations and tables are noteworthy for their absence, but in this field the lack is not felt as much as would be the case in other closely related fields of medicine.

The publisher has done a creditable job on a good grade of paper and at a modest price. The paper cover need be no drawback to those who handle their books carefully and who are primarily interested in the subject matter presented. The volume can be recommended to all interested in the broad subject of immunity in its various phases and not requiring technics and technical details.

Pneumokoktypernes forekomst i Danmark. Af Børge Vammen. [Occurrence of Pneumococcic Types in Denmark.] Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København, 1940. [With an English Summary.] Paper. Price, 8 Danish kroner. Pp. 104. Copenhagen: Ejnar Munksgaard, 1940.

Dr. Vammen has contributed, from Denmark, an excellent study on the type distribution in the pneumococcic pneumonias. The occurrence of various pneumococcus types as reported by investigators in Denmark, England and elsewhere and in America, where the intensive study of this subject originated, are compared in tables. The distribution of the types is similar in various places excepting for a strikingly greater incidence of type II in Denmark and England than in New York and Boston. There is an English translation of the excellent summary and numerous comprehensive tables, so that this book will be of value to workers unfamiliar with the Danish language. Vammen has added several additional new types to those of Cooper. They have been segregated from the x group or by more refined differentiation from some of the older types, notably IX and X. Vammen pleads for the establishment of a central international source for the preservation and distribution of pneumococcus strains and diagnostic serums. Under present conditions of world strife, this would be difficult. However, the William Hallock Park Laboratory of the New York City Department of Health has distributed cultures and typing serums since Georgia Cooper first described her types. The types are preserved by the American Type Culture Association; there will be unfortunate confusion if new numbers are assigned by each worker without consultation with some central responsible office. Vammen observes that "Repeated examinations of the nursing staff of a ward with many pneumonia patients showed that only 1.3 per cent had the same types as those found in the pneumonia patients of the ward. This low frequency, as compared with the frequency in family contacts, indicates that other circumstances than contact also play a part in the genesis of the carrier state." However, other circumstances need not be brought in until the closeness and continuity of contact and the use of utensils which occurs in family life are considered. This monograph is an exemplar of fine Scandinavian medicine and of the growing influence of American research. It appeared before the recent violation of Denmark and it is hoped that the western progress of Naziism will not spell the twilight of intellectual effort in the northern countries.

The Enamel of Human Teeth: An Inquiry into the Formation of Normal and Hypoplastic Enamel Matrix and Its Calcification. By Moses Diamond and Joseph P. Weinmann. From the Division of Oral Anatomy, School of Dental and Oral Surgery, Columbia University. Paper. Price, $1.50. Pp. 105, with 52 illustrations. New York: Columbia University Press, 1940.

The authors reject the generally accepted hypothesis of Retzius that human tooth enamel is formed in layers from within outward and that the organic matrix of each layer is calcified progressively as developed. According to them the organic matrix is formed in layers much as claimed by Retzius, but it is impregnated as it is produced with mineral salts in a colloidal state. The consistency of this matrix is not as soft as that of cheese or soft enough to be cut with the finger nail as described by Ebner and Beust but much firmer. Although the amount of contained mineral salts may progressively increase as the matrix grows older, there is no calcification until the full thickness of the matrix is fully formed and the enamel organ has begun to atrophy and undergo reduction. Then and then only does the relatively firm matrix with its content of colloidal minerals change into the mature hard, stonelike enamel. The term calcification according to the authors should be limited strictly to this last change. Hypoplasia of tooth enamel, they believe, is due to disturbances in the production of enamel matrix and not to disturbances of calcification. Furthermore, hypoplasia is limited in its origin to the last four prenatal months and the first year after birth. The principal contention of the authors seems to be adequately supported by strong evidence from their own and other material. Confirmation of some of the details is dependent on further examination by other methods, chiefly chemical, than those used. Many of the conclusions with respect to hypoplasia are to be doubted because they are based on too little evidence and because too little attention has been given to the effects of injuries on undifferentiated and fully differentiated cells and the consequent differences in the results. The type is unnecessarily large and the illustrations unduly generous in size; the printing, paper, cuts and workmanship are of high quality. There is an adequate bibliography.

Fractures and Other Bone and Joint Injuries. By R. Watson-Jones, B.Sc., M.Ch.Orth., F.R.C.S., Consulting Orthopædic Surgeon, Royal Lancaster Infirmary, Lancaster. Cloth. Price, $13.50. Pp. 723, with 1,040 illustrations. Baltimore: William Wood & Company, 1940.

The scope of this book goes far beyond the usual territory covered in books on fractures and dislocations. It includes all traumatic situations, including sprains and muscular injuries, and its principal virtue is the extreme thoroughness with which this field is covered in all details. The general principles which are announced at the beginning of the book are extremely sound and splendidly presented. Of particular value are the chapters on constitutional conditions in which trauma is the contributory factor. There is also an excellent chapter on vascular necrosis or aseptic necrosis in relation to trauma and an equally good one on vascular injuries complicating fractures. The chapter on nerve complications contains not only the treatment but also diagnosis and differentiation attendant on nerve injuries. One of the most important contributions is the presentation of the principles of fracture reduction, manipulative, standard of the reduction, plaster technic, traction, fixed and balanced, and transfixion technic. Everything is described in minute detail. The second part of the book deals with pathologic fractures, and here particularly the osteo-arthropathies and osteomalacias are of interest. Birth fractures are described in a separate chapter. In the third part the regional description of fractures is presented. Particularly attractive is the chapter on injuries of the trunk and head, and on the fractures and subluxations of the vertebrae. It is followed by an equally excellent chapter devoted to low back pain and sciatica with a splendid presentation of diagnosis and treatment. Of great value also are the chapters of the injuries of the shoulder, the section on periarthritis and the injuries and fractures of the elbow, particularly the supracondylar fractures. Fractures of the upper end of the femur and neck of the femur are given an equally thorough consideration. There are also the injuries of the knee and the ankle in special chapters. It would be going too far to point out all the excellent features of the book, which repeat themselves in every succeeding chapter. Presentation is superb, the illustrations are excellent, the material produced is rich, the roentgenograms are of the first quality. All in all, a most excellent book of almost overwhelming thoroughness, practical presentation, and most attractively and artistically edited.

The Diagnosis and Treatment of Pulmonary Tuberculosis. By John B. Hawes 2d, M.D., and Moses J. Stone, M.D., Assistant Professor of Medicine, Boston University School of Medicine, Boston. With a foreword by Richard C. Cabot, M.D. Second edition revised by Dr. Moses J. Stone. Cloth. Price, $2.75. Pp. 260, with 75 illustrations. Philadelphia: Lea & Febiger, 1940.

This book was apparently designed for medical students and general practitioners. Adhering strictly to the subject and considering the authors' avowed purpose of presenting "a brief concise textbook," it is obvious that the book contains some superfluous material and in certain chapters there is a crying need for a clearer statement of fundamental facts, a more detailed description of symptoms and signs and methods of procedure. The reader often comes to the end of a sentence longing for one or two additional words or he rounds out a paragraph wishing for another sentence for clarification. The medical student and the average doctor wanting in knowledge and experience to spread between the lines will close certain chapters with a feeling of confusion and disappointment. The chapter on roentgen ray diagnosis may be cited as an example. In this chapter considerable space is devoted to a discussion of pathologic types of pulmonary tuberculosis without giving a detailed description of the roentgen appearances in the respective types. The illustrations are good but the legends are not fully descriptive and they are not clearly identified with the text, which also is wanting in the matter of explicit interpretation. The same may be said of the illustrations in other chapters. On

the whole, this little volume contains much valuable material and many practical features which are not to be found in many of the more comprehensive textbooks. The historical approach is good and should help to arouse interest. The chapter on history taking is logically presented with a sound psychologic approach. The chapter on sanatorium treatment is good but it does not sufficiently stress the importance of the education of the patient and adequate follow-up after the sanatorium treatment is completed. The comparison of home and sanatorium treatment is well handled. Collapse therapy is brought down to the present with a brief but sound discussion. The authors are to be commended for their decided stand against preventoriums and summer camps "for individuals who have primary tuberculosis," also because of their conservative attitude toward climate and other controversial procedures, such as extrapleural pneumothorax and oleothorax.

Minor Surgery. By Frederick Christopher, S.B., M.D., F.A.C.S., Associate Professor of Surgery at the Northwestern University Medical School, Chicago. With a foreword by Allen B. Kanavel, M.D., F.A.C.S. Fourth edition. Cloth. Price, $10. Pp. 990, with 639 illustrations. Philadelphia & London: W. B. Saunders Company, 1940.

That this is the fourth edition in eleven years attests the popularity of this book and the immensely practical task it fulfils. The collection of a tremendous amount of authoritative data freely fortified by numerous and recent references is, in itself, a considerable accomplishment. The large amount of material included occasionally permits a slight element of confusion to creep in. Quotations from a number of authorities lend credence to a point of view without justifying its inclusion in a book of this nature. A good portion of the book has been prepared with the surgical intern and resident in mind.

It is interesting to note that the injection technic for inguinal hernia has been properly omitted despite its reported good results in the hands of a limited number of experts. Future editions will no doubt contain even less controversial matter as the fields of major and minor surgery grow more distinct. As the author states, no one knows exactly what is minor surgery; but it covers a myriad of conditions of lesser debilitating character. First aid treatment, also included in this book, is often preliminary treatment of injuries of serious nature. The definition of minor surgery as evaluated in this book can be summarized as major procedures on minor diseases and minor procedures on major diseases.

The author has assembled this vast array of material with considerable circumspection, cohesion and clarity. The value of the book in traumatic surgery cannot be denied in an age of increasing mechanical accidents. The methods of handling injuries to the extremities, fractures of the smaller bones, splinting and first aid treatment are well described. There are numerous illustrations obtained from the publications of competent authorities. This volume can be recommended to every surgical intern, resident and practicing physician.

Der gehemmte Mensch: Grundlagen einer Desmologie als Beitrag zur Tiefenpsychologie. Von Dr. med. Harald Schultz-Hencke. Paper. Price, 16.80 marks. Pp. 323. Leipzig: Georg Thieme, 1940.

This book is a typical outgrowth of German "science" of today, evidently written to prove to the political overseers of medical science in that country that the author is no longer to be regarded as contaminated by the "Jewish science" psychoanalysis with which he was formerly identified. Compilations from unquoted sources and an arbitrary choice of facts to fit a preconceived system are its main characteristics. Many of the discoveries of Freud are accepted as being matters of common knowledge, but Freud is never given any credit; he is quoted only when the author disagrees with him, which is quite often, or wishes to reproach him for having introduced confusing terms and erroneous conceptions. The author himself introduces a few new terms, such as "captative" and "retentive" tendencies, which he thinks clear matters up immensely. He denies the existence of infantile sexuality, although he furtively exploits many of the deductions drawn from Freud's observations of these phenomena. Not only Freud but other authorities are ignored in favor of the presumption that the author is the originator of his confused collection of psychiatric observations and theories. The book is not worth reading except as an illustration of how state politics can ruin medical science.

A Handbook for Dissectors. By J. C. Boileau Grant, Professor of Anatomy, University of Toronto, Toronto, and H. A. Cates, Associate Professor of Anatomy, University of Toronto. Being a Companion to "A Method of Anatomy" by J. C. Boileau Grant. Third edition. Fabrikoid. Price, $2.50. Pp. 239, with 9 illustrations. Baltimore: William Wood & Company, 1940.

This little book is intended for use with Grant's "A Method of Anatomy." Experience has evidently shown the need of directions for dissection additional to those contained in the larger book, hence this supplementary one. The directions are precise and clear. Endeavor has been made to help the student leave out something: the more important structures are printed in heavy type. This book and "The Method" together constitute an excellent guide to the first (and usually only) dissection made by medical students. Since the outlook of both books is toward clinical work in surgery and medicine, dissection under their guidance provides a good practical anatomic basis for further medical work. But students who are interested in anatomy rather from the biologic side, who seek to understand the principles of structure, its evolution, development and general plan, will go on to a study of the larger textbooks, perhaps with further dissection. Since this book is tied so closely to "The Method" by constant reference to its pages and its illustrations and is thus inseparable from it, one wonders if in future editions of "The Method" this little book might not be incorporated in it.

The Diabetic A B C: A Practical Book for Patients and Nurses. By R. D. Lawrence, M.A., M.D., F.R.C.P., Physician in Charge Diabetic Department, King's College Hospital, London. Seventh edition. Boards. Price, 3s. 6d. Pp. 64. London: H. K. Lewis & Co., Ltd., 1940.

The seventh edition of Dr. Lawrence's pasteboard covered manual for the use of patients is proof of its usefulness. It is short, concise, goes straight to the point and all concerned in the treatment of diabetes will approve of its orthodox character. The author's line ration scheme of prescribing has won more adherents in England than in this country. One line represents food containing the equivalent of 10 Gm. of carbohydrate, 7.5 Gm. of protein and 9 Gm. of fat. Dr. Lawrence believes in weighing diets, at least at the beginning of treatment, and at intervals thereafter. Of especial interest now is a part of the second paragraph of the preface: "So far the war has not brought any special hardships for diabetics, but I wish to mention two points about which I have received hundreds of enquiries. First, vitaminised margarine is just as good as butter for the nutrition of diabetics. And second, diabetics can obtain an extra meat ration in exchange for sugar by applying to their local food office."

As the Twig Is Bent. By Leslie B. Hohman, M.D., Associate in Psychiatry, Johns Hopkins Medical School, Baltimore. Cloth. Price, $2.50. Pp. 291. New York: Macmillan Company, 1940.

This is a collection of twenty-six essays on child guidance written for parents in an unusually readable literary style by a psychiatrist. The book will be enjoyed by parents because of the many well portrayed examples of human problems and the breeziness with which the author demonstrates their possible solutions. "Common sense" seems to be the solution for all psychologic problems, which thus evaporate like mist before the morning sun. The author is not a child psychiatrist and his naïveté which pervades the book and gives it such an optimistic note is ample evidence of his lack of experience in dealing with the "bent twig." Rules, precepts and logic, but not one sentence indicating a basic understanding of the child's emotional life.

Bibliografiya Russkoy radiologii i rentgenologii za 1896-1938 gg. [By] A. E. Molotkov. Pod redaktsiey i s predisloviem M. I. Nemenova. Vypusk 1. Radiy i radioaktivnye veshchestva vykhodit k 40-letiyu so dnya otkrytiya radiya (1898-1938). Bibliographie de radiologie et de roentgénologie russe pour la période 1896 à 1938. Fascicule 1. Radium et substances radioactives paru à l'occasion du quarantenaire de la découverte du radium (1898-1938). Paper. Price, 4 rubles. Pp. 55. Leningrad: Izdanie Gosudarstvennogo Rentgenologicheskogo, Radiologicheskogo i Rakovogo Instituta i Vsesoyuznogo Instituta Eksperimentalnoy Meditsiny imeni A. M. Gorkogo, 1938.

The aim of the publishers is to collect all the Russian literature on the subject of roentgen and radium radiation therapy. The present volume is devoted to the cataloguing of all the available literature in Russian on the subject of radium from 1896 to 1938. Some 700 titles are listed.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Refusal to Enjoin the Unlicensed Practice of Barbering.—The state board of barber examiners of North Dakota brought an action to enjoin Miller from engaging in the practice of barbering without a license, which under the barber practice act of North Dakota is a misdemeanor and for which a penalty is provided. The trial court dismissed the action and the board appealed to the Supreme Court of North Dakota.

While ordinarily, said the Supreme Court, equity has no jurisdiction to restrain the commission of crimes, when a state of facts is presented which, according to established principles of law, calls for the interposition of equity to protect legal rights the equitable jurisdiction is not destroyed because the acts sought to be prevented are criminal in their nature. In such a case, the equitable powers of the court are not put forth to enjoin the commission of a crime, although that may incidentally result, but they are put forth to protect legal rights against invasion by acts which, if committed, would cause injury for which the ordinary remedies at law would not afford adequate relief. The board contended that the unlicensed practice of barbering, which it sought to have the defendant enjoined from carrying on, constituted a public nuisance that equity would enjoin. But, answered the Supreme Court, no authority is cited in support of this contention, and none has been found. On the contrary, there seems to be unanimity in the authorities that, in absence of a statutory declaration to that effect, the engaging in a business or profession without having procured a certificate of authority or license prescribed by law does not of itself constitute a public nuisance calling for the interposition of equitable jurisdiction. The plain state of this case is, said the court, that the equitable powers of the court are invoked to enforce a regulatory statute, the barber practice act, and to forbid by injunction the doing of acts which that statute inhibits under penalty. The acts sought to be enjoined are unlawful only because they are made so by such statute. In the absence of the statute they would furnish no basis for either a civil or a criminal action or proceeding. The statute does not declare that the acts inhibited by it shall constitute a nuisance nor that such acts shall be subject to the equitable powers of the court. The statute, however, does say that such acts shall constitute a misdemeanor, and hence it renders any person who commits them subject to criminal prosecution.

For the reasons stated above, the Supreme Court affirmed the action of the trial court in dismissing the proceedings.—*Richmond et al. v. Miller (N. D.), 292 N. W. 633.*

Evidence: Medical Expert Witness Required to State Basis of His Opinion.—The plaintiff brought suit in the United States district court for the middle district of Pennsylvania to recover benefits under a life and disability insurance policy for total and permanent disability caused by a cardiac neurosis. Cardiac neurosis was described by the plaintiff's medical witness as a condition, functional and not organic, in which the individual's nervous system responds unfavorably to the belief (whether true or false) that he has some organic disease of the heart. At the trial the plaintiff's medical witness was asked whether or not, based on certain physical manifestations and symptoms which he had ascertained by physical examination, he could express an opinion as to how long the plaintiff's heart condition had existed. He replied that he could not. Over the defendant's objection he was then permitted to testify that, based on his examination of the plaintiff and the history of the case which he had elicited from the plaintiff but which he did not disclose, it was his opinion that the plaintiff's heart condition had existed two years prior to his first visit. From a judgment for the defendant insurance company notwithstanding a verdict of the jury for the plaintiff, the plaintiff appealed to the United States circuit court of appeals, third circuit.

The circuit court of appeals agreed with the plaintiff's contention that, according to a well recognized exception to the rule that hearsay evidence is inadmissible, a physician in testifying may base his opinion on statements made by his patient during the relationship of physician and patient. As is stated in 20 American Jurisprudence, p. 729, according to the great weight of authority the opinion of a physician is not rendered inadmissible in evidence by the fact that it is based wholly or in part on statements made to him by the patient, if those statements are made during an examination or in the course of professional treatment and with a view to effecting a cure; and such statements of an injured or diseased person, while not admissible as evidence of the facts stated, may be testified to by the physician to show the basis of his opinion. Although a physician is an expert on disease, no amount of expertness, continued the court, will enable the jury to accomplish the impossible and draw an inference from an unknown fact. Consequently the rule has been evolved which requires an expert witness, whether medical or otherwise, to disclose the data from which his expert opinion is formed. As is stated by Steinbrink in the Medical Witness, 6 Brooklyn Law Review 155, "If the expert were permitted to express his general views without indicating the facts upon which they are based, he would be usurping the function of the jury for to accept the opinion, the jury must accept as found all the facts underlying it." The court recognized that some recent model statutes relating to expert testimony contain provisions which permit, in the case of an expert having "personal knowledge," the reception of an opinion without the disclosure of its underlying data, leaving the elicitation of those minutiae to the option of the cross-examiner. However, no such statute is controlling in this case. In fact, continued the court, a Pennsylvania court decision, *Howarth* v. *Adams Express Co.*, 269 Pa. 280, 112 A. 536, which is binding on this court, has adopted the rule announced by Rogers on Expert Testimony that "An expert, testifying from personal knowledge, cannot be asked for an opinion based on facts which he has not given in evidence." In the instant case the plaintiff's medical witness refused to base his opinion on certain specific and enumerated physical manifestations and symptoms revealed by his examination of the plaintiff but instead volunteered and did base his opinion on the medical history of the case. The witness was not even asked to give that history to the jury and so his entire opinion became inadmissible.

Accordingly, the circuit court of appeals affirmed the judgment in favor of the defendant.—*Peters v. Mutual Life Ins. Co. of New York, 107 F. (2d) 9.*

Society Proceedings

COMING MEETINGS

American Academy of Pediatrics, Memphis, Tenn., Nov. 18-20. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.
American Clinical and Climatological Association, White Sulphur Springs, W. Va., Oct. 28-30. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
American Society of Anesthetists, New York, Dec. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
American Society of Tropical Medicine, Louisville, Ky., Nov. 12-15. Dr. E. Harold Hinman, Malaria Control Division, Wilson Dam, Ala., Secretary.
Association of American Medical Colleges, Ann Arbor, Mich., Oct. 28-30. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
Central Society for Clinical Research, Chicago, Nov. 1-2. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.
Indiana State Medical Association, French Lick, Oct. 29-31. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
New York State Association of Public Health Laboratories, Albany, Nov. 1. Miss Mary B. Kirkbride, New Scotland Avenue, Albany, Secretary.
Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov. 6-9. Dr. T. Floyd Bell, 400 Twenty-Ninth St., Oakland, Calif., Secretary.
Puerto Rico, Medical Association of, San Juan, Dec. 13-15. Dr. David E. Garcia, P. O. Box 3866, Santurce, Secretary.
Radiological Society of North America, Cleveland, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.
Southern Medical Association, Louisville, Ky., Nov. 12-15. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.
Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
Southwestern Medical Association, Tucson, Ariz., Nov. 21-23. Dr. M. P. Spearman, 1001 First National Bank Bldg., El Paso, Texas, Secretary.
Western Surgical Association, Topeka, Kan., Dec. 6-7. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

10:511-592 (Aug.) 1940

Histopathology of Defective Scar of High Cesarean Section and Mechanism of Subsequent Rupture of Uterus. N. W. Elton, Buffalo.—p. 511.

Rapid Flocculation Test for Syphilis Adapted to Cerebrospinal Fluid. W. F. Lorenz, Madison, Wis.—p. 527.

Pathologic Classification of Diseases of Myocardium. G. E. Brown Jr. and H. F. Hunt, Danville, Pa.—p. 540.

Unusual Manifestations of Infectious Mononucleosis. W. M. Fowler and R. T. Tidrick, Iowa City.—p. 548.

Steatocirrhosis of Liver. L. C. McGee, F. Levy and J. E. Martin Jr., Elkins, W. Va.—p. 554.

Human Infection with Bacillus Necrophorum. W. B. Martin, Norfolk, Va.—p. 567.

"False" Positive Paul-Bunnell (Heterophile) Reaction? C. F. Kent, Kansas City, Mo.—p. 576.

American J. Digestive Diseases, Huntington, Ind.

7:365-400 (Sept.) 1940

Body Build of Male Ulcer Patient. S. C. Robinson and M. Brucer, Chicago.—p. 365.

*Evaluation of Meulengracht Regimen in Treatment of Bleeding Peptic Ulcer. J. Chasnoff, S. Leibowitz and R. Schwartz, New York.—p. 373.

Functional Bowel Disturbance and Milk Allergy: Bedside Diagnosis. L. Cardon, Chicago.—p. 378.

Studies in Human Biliary Physiology: V. Influence of Metabolizable and Nonmetabolizable Sugars on Liver Bile Secretion. M. Jacobi, I. C. Zuckerman, B. Kogut and B. Klein, Brooklyn.—p. 382.

Secretory Studies in Whole Stomachs: Dilution Indicator Technic and Its Precision Measures. F. Hollander and J. Glickstein, New York.

Meulengracht Regimen in Bleeding Peptic Ulcer.—The essential features of Meulengracht's method, according to Chasnoff and his associates, are that the patients are fed from the very onset of hemorrhage and that they receive liberal food allowance consisting of a puréed high caloric, high vitamin diet. Meulengracht had observed that many patients who had not sought medical aid and had continued on their usual diet apparently made uneventful recoveries, that some patients with protracted hemorrhage stopped bleeding when fed and that some patients, despite the most rigid dieting, died, apparently from exhaustion rather than from the extent of the hemorrhage. Thus he was prompted to change the treatment of bleeding peptic ulcer. Chasnoff and his collaborators present mortality statistics of all cases treated with the Meulengracht regimen which have appeared in the literature and compare these with the statistics of the older methods of treatment. The mortality rate with the Meulengracht method was much lower than the rates reported by those employing either the former medical regimen or surgery. Chasnoff and his co-workers employed the Meulengracht procedure for twenty-one patients, all of whom showed evidence of fairly extensive loss of blood. For comparative purposes the authors studied the results obtained in an unselected group of seventy-two patients treated with the older "starvation-Sippy" method. Among the twenty-one patients treated with the Meulengracht diet there was one death, or a mortality rate of 4.76 per cent. In the control group eight deaths occurred, which brings the mortality to 11.1 per cent. The patients receiving the liberal feeding of the Meulengracht diet manifested a well-being not noted in those under the older method of treatment. The duration of the hospitalization was not reduced by the Meulengracht method, for, whereas the patients on the "starvation-Sippy" diet averaged twenty-one days of hospitalization, those on the Meulengracht regimen averaged twenty-seven days. These figures differ from those reported by Meulengracht and others. The percentage of perforation was higher for patients treated with the Meulengracht method than for those treated with other methods. The authors suggest that the increased feedings might possibly play a part.

American Journal of Diseases of Children, Chicago

60:471-782 (Sept.) 1940

Systemic Reticulo-Endothelial Granuloma: Nonlipoid Reticulo-Endotheliosis and Schüller-Christian Disease. A. Wallgren, Göteborg, Sweden.—p. 471.

Schilling Blood Count in Juvenile Lobar Pneumonia Treated with Sulfapyridine: Preliminary Report. J. L. Rogatz, New York.—p. 501.

*Effect of Varied Banana Intake on Nitrogen and Mineral Balances of Normal Children. Helen A. Hunscher, Frances Cope Hummel and Icie G. Macy, with cooperation of Mary Bates Olson, Priscilla Bonner, J. Horton, Marion L. Shepherd, Helen J. Souders, Louise Emerson and A. Theresa Johnston, Detroit.—p. 509.

Intestinal Parasites in Children in Toronto. E. Kuitunen-Ekbaum, Toronto.—p. 518.

Hospital Mortality and Morbidity of Infantile Eczema. J. Glaser, Rochester, N. Y., and W. M. Edwards, Washington, D. C.—p. 526.

Cow's Milk Treated by Base Exchange for Infant Feeding: Metabolism of Calcium, Phosphorus and Nitrogen. J. H. Hess, H. G. Poncher, Helen Woodward Wade and Jeannette C. Ricewasser, Chicago.—p. 535.

Absorption of Poliomyelitis Virus by Possibly Deficiently Medullated Nerves. J. A. Toomey, Cleveland.—p. 548.

*Therapeutic Procedures for Scarlet Fever: Comparative Studies. H. Rascoff and S. Nussbaum, Brooklyn.—p. 552.

Etiology of Multiple Deformities. D. Engel, Edinburgh, Scotland.—p. 562.

Nondiabetic Glycosuria in Children: Report of Nine Cases. Leona M. Bayer and J. H. Davis, San Francisco.—p. 580.

Regional Obstructive Pulmonary Emphysema in Infants and in Children: Emphysematous Cavities and Their Similarity to Necrotic Cavities, Congenital Pulmonary Cysts and Loculated Pneumothorax. J. Caffey, New York.—p. 586.

Estimation of Vitamin D in Blood Serum: II. Level of Vitamin D in Human Blood Serums. J. Warkany and Helen E. Mabon, Cincinnati.—p. 606.

Experimental Studies on Immunity in Diphtheria. M. Weichsel, New York.—p. 615.

Effect of Fetal Activity on Nutritional State of Infant at Birth. L. W. Sontag, Yellow Springs, Ohio.—p. 621.

Evaluation of Tuberculin Patch Test. A. H. Fineman and G. Bair, New York.—p. 631.

Simple Mechanical Aid in Treatment of Acute Rhinitis of Infancy. D. B. Landau, Hannibal, Mo.—p. 635.

Relative Ease of Interference with Growth and Development in Guinea Pig. M. B. Cohen, Cleveland.—p. 636.

Surgical and Medical Treatment of Exophthalmic Goiter of Children: Late Results. R. L. J. Kennedy, Rochester, Minn.—p. 677.

Banana Intake and Nitrogen and Mineral Balances.—Hunscher and her associates studied the effect on mineral balances of 100 or 200 Gm. daily of banana added to the diets of eight normal healthy children from 5 to 8 years of age. The children experienced three months of preliminary feeding and at least two weeks of training in metabolic technic. They lived in an environment that stimulated normal happy, healthful living. Each child was observed for from fifty to ninety consecutive days and no test interval was shorter than twenty days, the majority being from thirty to forty-five days in length. The data for the eight children for the preexperimental period is a total of 275 days and for the experimental period 285 days. A definite consistent metabolic response was noted to the increased banana intake. Data on the mineral accumulation of the eight children were averaged for each of the two periods. All the children grew during the study and showed consistent changes in metabolism in response to the inclusion of the larger quantity of banana in the diet. The daily addition of 100 Gm. of banana enhanced the rate of nitrogen storage from 17 to 22 mg. per kilogram of body weight daily, or from 3 to 4 per cent of the intake, although the nitrogen intake was reduced from 506 to 489 mg. per kilogram of body weight. Likewise the retentions of all the individual acid-base mineral elements were augmented if changed. The facts demonstrate that banana stimulated more rapid growth of both bone and soft tissue. The greatest difference between the alkaline-ash and acid-ash values of the diets without and with the additional 100 Gm. of banana was in their potassium content, 116 and 131 mg. per kilogram of body weight respectively. The apparent retention of this element increased from 8 to 10 mg. per kilogram daily. Although the daily calcium intake was reduced only by 1 mg. per kilogram of body weight, the apparent retention increased from 4 to 5 mg. per kilogram, indicating an enhanced rate of osseous development. The intake and retention of magnesium remained unchanged, and, although the sodium intake was reduced from 105 to 99 mg. per kilogram daily during the experimental period, the apparent

daily storage increased from 5 to 6 mg. per kilogram daily. By increasing the intake of banana the daily phosphorus intake was reduced by 3 mg. (from 53 to 50) per kilogram of body weight, yet the apparent retention was increased from 5 to 6 mg.; 70 per cent of the phosphorus retained is used in the formation of bone and 30 per cent becomes a component part of the soft tissue. The decreased intake of chlorine was accompanied by a higher retention. Although the daily intake of sulfur was reduced slightly (2 mg. per kilogram) its retention, essential to growth of soft tissue, increased from 1 to 4 per cent of the intake. As nitrogen is utilized it carries with it the major portion of the sulfur, from 30 to 40 per cent of the phosphorus retained and some of the potassium. There was a consistent relation between the percentage of nitrogen retained and the percentages of sulfur, phosphorus and potassium utilized. The increased storage of nitrogen was paralleled by augmented retentions of sulfur, phosphorus and potassium. An increase in the potassium: sodium ratios with the larger consumption of banana supports the belief that the formation of soft tissue was stimulated to a more rapid rate. Therefore banana in the diet has definite nutritive advantage but its modus operandi is still vague. The effect of the ascorbic acid or l-malic acid content of the fruit is not fully understood, but experimental work indicates that it stimulates excretion of citric acid and serves as an endogenous precursor of citric acid, which is considered a "physiologic metabolite."

Therapeutic Procedures for Scarlet Fever.—Rascoff and Nussbaum made a controlled study of 293 patients with scarlet fever so as to determine the value of sulfanilamide and scarlet fever antitoxin therapies singly and in combination. Depending on the severity of the illness each patient was placed in one of three groups: 125 patients of group 1 were admitted with "mild" (temperature of 100.5 F. or less with no toxicity or complications) scarlet fever and were treated symptomatically; 154 patients of group 2 were admitted with "moderately severe" (temperature of 101 F. or more, with toxicity and complications) scarlet fever and were treated, in rotation, with sulfanilamide, scarlet fever antitoxin, scarlet fever antitoxin or sulfanilamide or were given no therapy (control), and the fourteen patients of group 3 who were severely ill (temperature of 104 F. or more, with marked prostration and complications) were given scarlet fever antitoxin or scarlet fever antitoxin and sulfanilamide. The average age of group 1 patients was 8.6 years and the mean day of the illness on admission was 2.9. Signs present on admission were usually a slight rash, associated with a "strawberry" tongue, and a mild angina. A number of these patients were sick at home for several days and on admission were afebrile. The 125 patients with mild scarlet fever (41 per cent of all admissions) indicate the benign nature of the disease that is prevalent today. During the stay in the hospital adenitis developed in eight, otitis in two, tonsillitis in two and ethmoiditis in one. Four of the eight patients with adenitis received sulfanilamide and four did not. The course of the adenitis seemed to be unaffected by the therapy. The mean duration of the group 1 patients' stay in the hospital was 21.7 days. The average age of forty-one patients of group 2 receiving sulfanilamide was 7.4 years, the mean day of disease on admission 2.6, the mean duration of initial pyrexia while hospitalized was 2.6 days, there were six complications (three adenitis, two otitis media and one mastoiditis) and the mean duration of hospital days was 25.4. The respective figures for the forty patients receiving scarlet fever antitoxin were 10.5 years, 2.8, 2.5 eight (two adenitis, four otitis media, one arthritis and one nephritis) and 21.6 days; for the thirty-one given sulfanilamide and scarlet fever antitoxin they were 8.6 years, 3.0, 1.9, five (three adenitis and two otitis media) and 23.8, and for the forty-two given no treatment the figures were 7.8 years, 3.1, 2.5, thirteen (six adenitis, five otitis media, one tonsillitis and one ethmoiditis) and 25.5. The patients receiving the combined therapy apparently had a shorter duration of initial pyrexia (1.9 days) in the hospital, but this advantage was offset by the longer duration (three days) of the disease prior to admission to the hospital as compared to the other subgroups (2.6, 2.8 and 3.1 days). The greatest number of complications developed in patients receiving no therapy. The ages of the fourteen group 3 patients varied between 2 and 12 years, the day of illness on admission from one to eight, only four patients had no complications (four had tonsillitis, one adenitis, one otitis media, one otitis media and arthritis, one petechial rash and tonsillitis, one otitis media and pneumonia and one otitis media and pneumonia with effusion) and days in the hospital varied from seven to 159. One patient died of sepsis thirty-six hours after admission. The patients of this group were seriously ill and every possible aid was given them and therefore most of them were given sulfanilamide and those with pulmonary complications received sulfapyridine. The results of the study show that sulfanilamide in scarlet fever is not as beneficial as it is in certain other streptococcic infections. It does not diminish the toxicity or duration of the fever. Frequently the malaise is intensified by the drug. In view of the prevailingly favorable opinion and its availability, sulfanilamide should be given in severe and moderately severe scarlet fever until evidence to the contrary is produced. Scarlet fever antitoxin or convalescent serum successfully combats the initial toxic phase and should be given early in the disease.

American Journal of Medical Sciences, Philadelphia

200:289-428 (Sept.) 1940

Dysphagia with Disorders of Heart and Great Vessels. A. L. Bloomfield, San Francisco.—p. 289.
Further Experience with Globin Insulin. L. Bauman, New York.—p. 299.
Levulosuria: Study of Two Cases in Brothers. V. C. Jacobsen, Troy, N. Y.—p. 304.
*Studies on Preservation of Human Blood. J. A. Kolmer, with assistance of Mary Howard, Philadelphia.—p. 311.
Vitamin C in Chronic Lead Poisoning: Experimental Study. L. Pillemer, J. Seifter, A. O. Kuehn and E. E. Ecker, Cleveland.—p. 322.
Plasma Coagulation Time as Simple Test for Vitamin K Deficiency. G. Cheney, San Francisco.—p. 327.
QRS Pattern of Diagnostic Value in the Electrocardiogram. W. A. Soderman and H. T. Engelhardt, New Orleans.—p. 337.
Vascular "Spider" Associated with Cirrhosis of Liver. A. J. Patek Jr., J. Post and J. C. Victor, New York.—p. 341.
Temperature and Brain Metabolism. H. E. Himwich, Albany, N. Y.; K. M. Bowman, New York; J. F. Fazekas, Albany, N. Y., and W. Goldfarb, New York.—p. 347.
Pathologic Changes Following Prolonged Administration of Sulfathiazole and Sulfapyridine. G. Rake, H. B. van Dyke and W. C. Corwin, New Brunswick, N. J.—p. 353.
Peripheral Neuropathy and Toxic Psychosis with Convulsions Due to Sulfamethylthiazole: Report of Case. C. F. Garvin, Cleveland.—p. 362.
Sulfapyridine in Treatment of Gonococcic Infections After Sulfanilamide Failure. C. Ferguson, M. Buckholtz and R. A. Hingson, Staten Island, N. Y.—p. 365.
Treatment of Falciparum Malaria of Drug Addicts. H. Most and N. Jolliffe, New York.—p. 367.
β Methylcholine Urethane: Its Action in Various Normal and Abnormal Conditions, Especially Postoperative Urinary Retention. I. Starr and L. K. Ferguson, Philadelphia.—p. 372.
*Allergic Intestinal Bleeding in the Newborn: Clinical Syndrome. M. I. Rubin, Philadelphia.—p. 385.
*Incidence of Aspirin Hypersensitivity. Emily Gardner and W. B. Blanton, Richmond, Va.—p. 390.
Motility and Chemotaxis of Leukocytes in Health and Disease. O. T. Mallery Jr. and M. McCutcheon, Philadelphia.—p. 394.

Preservation of Human Blood.—Kolmer preserved the blood of two adult donors belonging to groups A and B with four different preservatives for twenty-one days at from 4 to 6 C. Of the four preservatives employed, two were without carbohydrate (plain citrate and Moscow Institute of Hematology), one with dextrose (modified Rous-Turner) and one with dextrin (Maizels and Whittaker). The blood was examined within twenty-four hours and at the end of three, five, seven, ten, fourteen and twenty-one days for dehemoglobinization, fragility and preservation of erythrocytes and leukocytes. Special attention was paid to the neutrophils and the preservation of platelets, prothrombin, iso-agglutinins, complement and bactericidal activity. The two carbohydrate preservatives gave better protection of erythrocytes against dehemoglobinization, fragility and disintegration than the plain citrate and Moscow Institute of Hematology preservatives. The platelets and leukocytes were markedly reduced within three days with all four preservatives. The two carbohydrate preservatives gave somewhat better preservation than the two without dextrose or dextrin. The neutrophils were disintegrated. A slight decrease in prothrombin time (Howell) was observed with the plasmas of all preserved blood within the first twenty-four hours after its collection. This was due to disintegration of platelets. Dur-

ing the following three to seven days this was followed by an increase presumably due to loss of prothrombin. The iso-agglutinins showed no decrease during the first ten days with all four preservatives, but some diminution occurred after fourteen and twenty-one days. This was somewhat less marked with the two carbohydrate preservatives. Complement was well preserved by all four preservatives for the first seven to ten days. The bactericidal activity of the plasmas for Bacillus typhosus was well preserved by all four preservatives for seven days, following which rapid deterioration occurred.

Allergic Intestinal Bleeding in the Newborn. — The occurrence of intestinal hemorrhage as an allergic manifestation in infants, according to Rubin, has escaped description in the pediatric literature. During the last three years he has observed six such cases. The patients' histories are so dramatically identical, differing only as to minor details, as to form a definite clinical syndrome. There was in each instance a strong family history of allergy, usually bilateral, and cow's milk feeding was started immediately or within a few days after birth. Hunger or what was thought by the mother to be hunger was a constant complaint. This "hunger" probably represented abdominal discomfort and was manifested as "colic." Despite this, gain in weight was not impeded; in fact, it was above the average. The "colic" first appeared about three weeks after cow's milk feeding and became progressively worse. Within a few days loose stools appeared, soon to contain mucus and varying amounts of bright red blood. The blood promptly and completely disappeared from the stools within forty-eight hours after cow's milk was withdrawn from the diet. The mucus in the stools and the "colic" disappeared shortly afterward. In two of the children the "colicky" pains were associated with visible large gastric peristaltic waves indicative of pylorospasm. This was probably a part of the generalized gastrointestinal spasm which disappeared when the other symptoms were relieved. Diathetic eczema developed in all but one of the infants within a few months after the onset of the intestinal symptoms. One child also had asthma. Bleeding from any other part of the body was not observed. The bleeding and clotting times were normal. Bleeding from the intestinal tract did not recur after the cow's milk was withdrawn, except in one baby who also was sensitive to goat's milk. The melena disappeared when goat's milk was withdrawn and the child placed on a soybean mixture. The other infants tolerated goat's milk well.

Acetylsalicylic Acid Hypersensitivity. — Gardner and Blanton reviewed the histories of 467 private and clinic patients to determine the incidence of acetylsalicylic acid sensitization. More than half of the patients had asthma. All of them were regarded as having some sort of allergy. Salicylates may have influenced the development of allergic symptoms in five. A patient with angioneurotic edema involving the lips, cheeks and eyelids thought the taking of a tablet containing acetylsalicylic acid, acetanilid, potassium bromide and caffeine precipitated her attacks. Another patient thought the same product might cause an attack of asthma to develop. A patient with angioneurotic edema thought her attacks were induced by acetylsalicylic acid and a powder containing the ingredients of the aforementioned tablet. A patient with asthma complained of nausea after taking acetylsalicylic acid. Another reported that wheezing sometimes followed the use of salicylates. Dramatic consequences were not encountered. Fifty allergic patients were questioned whether any of the following symptoms occurred after taking acetylsalicylic acid: gastric discomfort, tachycardia, mental exhilaration, nausea, vomiting, diarrhea and ringing in the ears. They were also questioned about their experience in taking quinine. Forty-four of these fifty patients suffered from asthma, three had atopic dermatitis, one urticaria, one vasomotor rhinitis and one hay fever. All but three admitted taking acetylsalicylic acid or a compound containing it. Only four experienced unpleasant symptoms which they thought referable to it; two had rapid pulse and flushing, one had a depressed feeling and one complained of wakefulness. Of its effects on the allergic disorder itself, thirty-three stated they had never taken it for this purpose, five that it had had no effect and twelve thought it beneficial. In none were allergic symptoms provoked. It was found that seventeen had never knowingly taken quinine. Those who had used it had done so only occasionally. Rashes had followed its use in two cases, and dizziness resulted in one instance. Allergic symptoms were not provoked. To throw further light on the hypersensitivity of allergic patients to acetylsalicylic acid the authors gave 5 grains (0.32 Gm.) of the drug to each of 103 consecutive patients admitted to the immunology clinic, after a negative history of such sensitivity was secured. Each patient was observed at the end of ten, thirty, sixty and 120 minutes. Fourteen maintained that "the medicine" had made them feel better. Two patients with asthma stated that they had a slight sense of constriction in the chest. The symptoms were transitory and may not have been the result of the drug. None of these 103 patients reacted violently. Of approximately 90,000 allergic patients seen by twenty-two allergists 170 had shown evidence of sensitivity to acetylsalicylic acid. This represents two per thousand. Among the same group, seventy-one instances of quinine sensitivity were reported. Study of the annual consumption of acetylsalicylic acid and quinine in this country shows that 5,143,672 pounds of acetylsalicylic acid was sold in the United States in 1937. This represents an average annual consumption of one half ounce (240 Gm.) or forty-eight tablets by each person. In the same year 3,458,009 ounces of quinine was consumed in this country. Therefore about seventeen times as much acetylsalicylic acid as quinine is consumed. If, out of a group of 90,000 allergic individuals, 170 were sensitive to acetylsalicylic acid and seventy-one to quinine, the chance of a given individual's being sensitive to quinine is seven times as great as is his chance of being sensitive to acetylsalicylic acid. These figures do not suggest that acetylsalicylic acid ranks first among allergy producing chemicals.

Archives of Internal Medicine, Chicago

66:531-784 (Sept.) 1940

Spontaneous Hypoglycemia Due to Atrophy of Adrenal Glands: Report of Case. J. G. Rushton, R. W. Cragg and L. K. Stalker, Rochester, Minn.—p. 531.
Hypertension (Goldblatt) and Unilateral Malignant Nephrosclerosis. O. Saphir and J. Ballinger, Chicago.—p. 541.
Pulmonary Infection and Necrosis in Diabetes Mellitus: Report of Case of Dissecting Necrotic Pneumonia Complicating Pancreatic Lithiasis. S. E. Moolten, New York.—p. 561.
Structural Changes in Arterioles of Myocardium in Diffuse Arteriolar Disease with Hypertension Group 4. H. M. Odel, Rochester, Minn.—p. 579.
Fatty Degeneration of Heart Causing Myocardial Insufficiency: Report of Case. C. F. Garvin, Cleveland.—p. 603.
Diabetes Insipidus Associated with Diabetes Mellitus: Metabolic Studies and Report of Case. J. H. Talbott, F. S. Coombs, W. V. Consolazio and L. J. Pecora, Boston.—p. 607.
Arterial Blood Pressure in Cases of Auricular Fibrillation, Measured Directly. W. C. Buchbinder and H. Sugarman, Chicago.—p. 625.
*Renal Involvement in Disseminated Lupus Erythematosus. J. M. Stickney and N. M. Keith, Rochester, Minn.—p. 643.
Measurement of Vitamin A Status of Young Adults by Dark Adaptation Technic. Evelyn Lyman Blanchard, Davis, Calif., and H. A. Harper, Los Angeles.—p. 661.
*Protamine Zinc Insulin: Clinical Study: Report of Group of Diabetic Patients in Whose Cases Glycosuria Was Disregarded for One Year. E. Tolstoi and F. C. Weber Jr., New York.—p. 670.
*Evaluation of Vitamin B Therapy for Diabetes. L. B. Owens, S. S. Rockwern and Edna G. Brown, Cincinnati.—p. 679.
Pancreatic Secretion in Man After Stimulation with Secretin and Acetyl-Beta-Methylcholine Chloride: Comparative Study. M. W. Comfort and A. E. Osterberg, Rochester, Minn.—p. 688.
Vascular Diseases: Review of Some Recent Literature, with Critical Review of Surgical Treatment. G. W. Scupham, G. de Takáts, T. R. Van Dellen and W. C. Beck, Chicago.—p. 707.

Renal Involvement in Disseminated Lupus Erythematosus.—Stickney and Keith summarize visceral involvement in disseminated lupus erythematosus and analyze the renal, clinical and necropsy manifestations observed in fifteen cases that came to postmortem at the Mayo Clinic between January 1918 and July 1939. The clinical and microscopic diagnosis was proved in every instance. Uremia was the terminal point of the disease in only four cases, with a blood urea of more than 60 mg. per hundred cubic centimeters. In these and in five others fairly constant albuminuria, microscopic hematuria and cylindruria were present. The urinary changes closely paralleled the severity of the cutaneous symptoms of most of the cases. All studies of renal function indicated good function until the final stages of the disease. In two cases albuminuria preceded the cutaneous lesions. In the others the cutaneous symptoms preceded the albuminuria, and the time between the

onset of albuminuria and death varied up to eighteen months. Cotton wool exudates were observed in the ocular fundi in one case and small hemorrhages in another. In three there was evidence of angiospasm in the retinal arterioles. The weights of all the kidneys were normal or greater than normal. Definite hypertrophy was encountered three times, and in none of these was there much interstitial edema. Hypertrophy of the liver was present in two cases. The absence of renal contraction is consistent with the fact that severe hypertension was not found. There were no significant changes in the renal arteries and arterioles. A typical pyelonephritis was not found. The most common microscopic observation was an increase in the endothelial cells of the glomerular tufts with a reduction of the erythrocytes in the capillary loops. Some degree of proliferation of endothelial cells was present in six cases. Hyaline eosin-staining material in the glomerular capillaries was observed in five cases and this probably represented a degenerative process. Definite fibers, which stained like and apparently were derived from the basement membrane, were seen within the glomerular capillaries in five cases in sections stained with azocarmine. Tubular damage, except in regions related to infarction, was minimal, although a few hyaline and granular casts were found in several cases. No significant deposit of lipoid or amyloidosis was found. For comparison with the described renal changes, renal sections of eighty-five patients dying of various other causes and coming to necropsy were studied. Eleven of these had renal changes comparable to those seen in lupus erythematosus. These patients make up the "control series." The renal changes in the control series, which did not include any with known renal disease, were as marked as most of those seen in the lupus erythematosus series, but the intracapillary hyaline changes were not seen in the control group. These intracapillary hyaline changes were similar to the lesion seen frequently in bacterial endocarditis. If in disseminated lupus erythematosus the renal disorder is an acute glomerulonephritis, it must be concluded that its duration does not coincide with that of the albuminuria and hematuria but that it is a terminal process. Other possibilities might be that the disorder is a peculiar variety of nephritis with a low virulence or that it is a degenerative process secondary to a toxic debilitating disease.

Protamine Zinc Insulin.—Tolstoi and Weber observed for fifty and sixty days respectively two hospitalized patients who received one dose of protamine zinc insulin daily and a diet of 1,640 calories, composed of 75 Gm. of protein, 60 Gm. of fat and 200 Gm. of carbohydrate. They concluded that satisfactory treatment of diabetes mellitus with protamine zinc insulin involved the following criteria: (1) maintenance of weight, (2) absence of ketone bodies in the urine and (3) freedom from thirst, polyuria, frequency of urination, hunger, weakness, fatigue, polyphagia, pruritus and visual disturbances. They felt that it was the utilization and not the excretion of carbohydrates which was of prime importance and that glycosuria was not an undesirable feature, as it protected the patient from reactions. They have treated eighty-four ambulatory patients with one daily injection of insulin for at least one year and made no effort to maintain the urine free from sugar. Only twenty-seven had persistent glycosuria throughout the period of observation. These twenty-seven were in good health and socially and economically useful. Not only did the majority of them maintain their weight but some gained weight, even though heavy glycosuria was almost always present. There were no complaints or symptoms associated with the glycosuria, and infections were no more frequent than in those whose urine was usually free from sugar. All these patients enjoyed much more freedom, as there was no necessity for careful dietary measurements nor did they need to carry their syringe and insulin. They administered the insulin to themselves every morning, were not singled out as a group apart from their fellow men, and their habits of living approximated the normal ones. There is no evidence to show that, with protamine zinc insulin, utilization of carbohydrates does not take place in spite of hyperglycemia and glycosuria. Glycosuria has so dominated the study of the treatment of diabetes that the factor of utilization has been almost totally ignored. It has been established by Allen and Du Bois and their associates that for short periods the diabetic patient, irrespective of the severity of the disorder, is capable of physiologically utilizing carbohydrate. Today the physiologic utilization of carbohydrates can be prolonged by insulin. Therefore hyperglycemia and glycosuria must be of secondary importance. The most important and physiologic basis for satisfactory treatment appears to be not how much sugar is excreted but how much is metabolized. Bridge and Winter have demonstrated that in an insulin-treated diabetic person carbohydrate is utilized in the presence of hyperglycemia and sequential glycosuria. They conclude that neither the value for blood sugar nor the degree of glycosuria is an adequate criterion for the regulation of diabetes. Their conclusion is particularly applicable to patients treated with protamine zinc insulin. The authors feel that if a state of carbohydrate utilization can be maintained in the diabetic person (and this is readily accomplished by the use of protamine zinc insulin) a physiologic state has been created and that the guiding principles for such a status in the presence of glycosuria and hyperglycemia are the three criteria listed.

Vitamin B Therapy for Diabetes.—Good results have been claimed from the administration of thiamine and ascorbic acid to persons with diabetes. Owens and his co-workers have undertaken a similar study of twenty-five diabetic patients well standardized for from six to eighteen months prior to vitamin therapy. Under conditions of adequate control, thiamine and riboflavin were found to produce no noticeable alteration in the diabetic state except for amelioration of neuritic pain by thiamine. Vitamin therapy for diabetes would seem to be without basis in fact. Diabetic patients regularly show a reduction in insulin need as the months of adequate control pass and eventually a basic level is reached requiring no change unless infection or other intercurrent disease upsets the established balance. Therefore for well controlled diabetes there appears to be no need for thiamine or riboflavin beyond the amounts present in ordinary diabetic diets, except for diabetic neuritis, on which thiamine has almost a specific effect. In most cases of such neuritis improvement also occurs when the diabetes is controlled by proper diet and insulin. This might suggest a thiamine deficiency during the uncontrolled period, but the possibility also exists that the improvement in neuritis results only from increased tissue combustion of sugar under insulin therapy and not from a specific lack of thiamine. Actual and severe vitamin deficiency may play a part in diabetic coma when food and vitamin intake ceases and the presence of fever enhances combustion. The usual methods of treating coma do not provide for any replenishment of vitamins. The most severe evidences of damage due to coma occur in the tissues with the highest rate of combustion and therefore with the greatest need for the vitamin B fractions—the brain, the kidney and the heart muscle. Diabetic coma still presents an unsolved clinical problem, with a fatality rate as high as in the early days of insulin therapy.

Archives of Otolaryngology, Chicago

32:417-610 (Sept.) 1940

*Aviation Deafness—Acute and Chronic. P. A. Campbell, Chicago, and J. Hargreaves, Washington, D. C.—p. 417.
Certain Reactions of Laryngeal Tissues to Medicinal Agents. R. A. Fenton, with collaboration of O. Larsell, Portland, Ore.—p. 429.
Myasthenia Laryngis: Observations on Larynx as an Air Column Instrument. C. Jackson, Philadelphia.—p. 434.
Nystagmography: Method for Graphic Recording of Nystagmus During and After Turning and of Caloric Nystagmus. F. H. Linthicum, Los Angeles.—p. 464.
Laryngologic Aspects of Sporadic Infectious Mononucleosis. W. E. Grove, Milwaukee.—p. 472.
Cancer of Larynx: Analysis of 250 Operative Cases. L. H. Clerf, Philadelphia.—p. 484.
Osteoma of Maxillary Sinus: Report of Case. A. G. Rawlins, San Francisco.—p. 499.
Brittle Bones Associated with Deafness and Blue Scleras: Report of Syndrome in Two Persons of One Family. M. S. Fox and S. J. Sweet, Milwaukee.—p. 506.
Paranasal Sinuses. S. Salinger, Chciago.—p. 532.

Aviation Deafness.—Campbell and Hargreaves classify the deafness of aviators according to its cause: (1) acute fatigue of the end organ of hearing and related structures, (2) chronic accumulative fatigue of the end organ and related structures, (3) conduction deafness due to changes in pressure in the middle ear and (4) chronic conduction deafness due to alteration in tissue resulting from faulty ventilation of the middle ear. The first two classifications are manifested by a decrease in hearing

acuity in the neighborhood of the 4,096 area—a perception deafness—and the last two by a decrease in the lower frequencies (from 128 to 1,024), a form of conduction deafness. Both types of deafness may be mixed to give any form of audiogram, which may be altered by the usual changes and hazards coincident with life. Fatigue of the end organ of hearing is due to noise and the effect of other vibratory energies inherent with flight. The 4,096 area is peculiarly vulnerable because of its exposed position and possibly altered blood supply. Altitudinal decrease in oxygen may be a factor in its production. Physiologic or pathologic failure of the middle ear to be properly ventilated during altitudinal changes in pressure leads to acute or chronic changes in the middle ear, with the usual picture of conduction deafness. Rapid advance in aircraft design (sound-proof cabins) and in flight regulation and education will decrease aviation deafness, making the problem less serious in the future.

Archives of Pathology, Chicago

30:651-842 (Sept.) 1940

Etiology of Acute Hemorrhagic Pancreatitis, with Special Reference to Vascular Factors: Analysis of Autopsies and Experimental Investigation. C. J. Smyth, Ann Arbor, Mich.—p. 651.

Component of Gallstones Insoluble in Ordinary Solvents and Accounting in Part for Their Dark Coloration. H. G. Aronson, Chicago.—p. 670.

Changes in Cartilage and Bone of Immature Female Guinea Pigs Due to Undernourishment with Consideration of Processes of Repair Following Period of Refeeding. M. Silberberg and Ruth Silberberg, St. Louis.—p. 675.

Wallerian Degeneration in Sciatic Nerve of Rat: Comparative Study with Silver, Osmic Acid and Chlorate Osmic Acid Methods. R. L. Swank, Boston.—p. 689.

Influence of Sulfanilamide and Sulfapyridine on Experimental Pneumococcic Pneumonia in Rats. D. H. Goldstein and I. Graef, New York.—p. 701.

Skin Color and Skin Cancer. J. Taussig and G. D. Williams, St. Louis.—p. 721.

Studies in Experimental Lipoidoses: I. Phosphatides. A. Ferraro and G. A. Jervis, New York.—p. 731.

Histology of Tumors of Peripheral Nerves. N. C. Foot, New York.—p. 772.

Bulletin New York Academy of Medicine, New York

16:553-604 (Sept.) 1940

The Problem of Aging. G. M. Piersol, Philadelphia.—p. 555.

Histaminase: Physiologic Effects on Man and Its Therapeutic Value in Medicine. Grace M. Roth and B. T. Horton, Rochester, Minn.—p. 570.

Medical Management of Disorders of Biliary Tract. J. R. Twiss, New York.—p. 585.

Endocrinology, Los Angeles

27:345-532 (Sept.) 1940. **Partial Index**

Comparison of Certain Effects of Desoxycorticosterone Acetate, Corticosterone and Cortical Extract on Patient with Addison's Disease. J. W. Ferrebee, C. Ragan, D. W. Atchley and R. F. Loeb, New York.—p. 360.

*Suprarenal Cortical Hormone and Salt in Treatment of Pneumonia and Other Severe Infections. D. Perla and Jessie Marmorston, New York.—p. 367.

Is the Potassium Tolerance Curve of Value in Diagnosis of Adrenal Cortical Insufficiency in Man? J. A. Greene, H. Levine and G. W. Johnston, Iowa City.—p. 375.

Further Observations on Use of Adrenal Cortex Extract in the Psychotic and Nonpsychotic Patient. C. A. Loehner, Salem, Ore.—p. 378.

Feminization and Demasculinization of a 17 Year Old Girl by Injections of Stilbestrol. H. Lisser, San Francisco.—p. 385.

Further Experiences with Hormone of Pregnant Mare Serum. S. L. Siegler, Brooklyn.—p. 387.

Treatment of Impotence by Male Sex Hormone. C. D. Creevy and C. E. Rea, Minneapolis.—p. 392.

Sex Incidence of Peptic Ulcer in Children. H. C. Saltzstein, A. A. Farbman and D. J. Sandweiss, Detroit.—p. 400.

Chorionic Gonadotropic Effects on Height and Osseous Development in Sexually Underdeveloped Young Boys. G. B. Dorff, Brooklyn.—p. 403.

Suggestions for Conducting Growth Studies. E. H. Watson and R. C. Moehlig, Detroit.—p. 411.

Effect of Fasting on Insulin Sensitivity. H. Selye, Montreal.—p. 434.

Response of Testis to Small Doses of Testosterone Propionate. H. S. Rubinstein and A. A. Kurland, Baltimore.—p. 461.

Effect of Atropine on Gastrointestinal Tract Following Thyroid Medication. S. Morrison and M. Feldman, Baltimore.—p. 500.

Relation of Cervical Sympathetic Nerves to Activity of Thyroid. S. Brock, G. E. Doty, L. Krasno and A. C. Ivy, Chicago.—p. 504.

Adrenal Cortex Extract and Salt for Severe Infections.—Perla and Marmorston state that during the last two years adrenal cortex extract was used in the private practice of Marmorston in the treatment of seventeen cases of bronchopneumonia, one case of therapeutic malaria for dementia paralytica and six instances of severe grip. The general physiologic care of severe infection was carried out for all these patients. In addition, adrenal cortex extract in amounts of from 2 to 5 cc. twice a day intramuscularly or subcutaneously was administered from the first day of observation and continued for two or three weeks until recovery. The apparent effects of the extract were as follows: 1. The normal blood pressure with prevention of collapse was maintained. 2. There was an evident decrease of toxicity. 3. Distention was avoided, the appetite improved and the sense of well being was increased. 4. There was an apparent shortening of the period of convalescence. In the cases with pneumonia, the signs in the chest did not clear up sooner than is usually anticipated. Sulfapyridine was given to three patients (two with pneumococcic infection and one with Streptococcus viridans pneumonia) but in two it was abandoned because of severe toxic symptoms (rash, rise in temperature and vomiting). The blood pressure of these patients was maintained though the psychic depressive effect of the sulfapyridine persisted. In several of the patients, periods of collapse were readily combated by the adrenal cortex extract, given intramuscularly in amounts of from 3 to 5 cc. every six hours night and day. The patient in whom malaria was induced went into profound collapse following the third chill. The blood pressure dropped to 60 systolic, 40 diastolic. Epinephrine had only a transient effect. Adrenal cortex extract was then administered for the first time, 5 cc. intravenously and maintained at the rate of from 3 to 5 cc. twice a day intramuscularly. The blood pressure rose promptly to 110/80 and was maintained. One hour after the first injection the patient sat up in bed, said he felt fine and asked for food. Similar experiences have been repeated in other cases. The diagnosis of the seventeen cases of bronchopneumonia was confirmed by x-ray examination. Only a single death occurred, that of a woman of 65 with a recent myocardial infarct complicated by bronchopneumonia. Two men and one woman more than 75 years of age made uneventful recoveries from bilateral bronchopneumonic processes. No complications occurred among the sixteen patients who recovered. The authors conclude that a quantitative evaluation of the extract as an adjunct in the treatment of severe infections is difficult. No definite chemical standard of its action on patients with intact adrenals who are given moderate doses of the extract is available. Nevertheless the clinical value is apparent and an extensive trial is indicated.

Illinois Medical Journal, Chicago

78:193-284 (Sept.) 1940

Electrosurgical Obliteration of Gallbladder Without Drainage: Report of Results of 980 Cases with Mortality of 0.3 per Cent. M. Thorek, Chicago.—p. 211.

Applications of Vitamin B_1 to Neuropsychiatry. F. G. Norbury, Jacksonville.—p. 228.

Cholecystography: Special Reference to Diagnostic Value of Emptying Time. A. Hartung and J. Grossman, Chicago.—p. 233.

Progressive Importance of Role of Practicing Physician in Tuberculosis Control. H. C. Sweany, Chicago.—p. 238.

Cardiac Aneurysm: Evaluation of Its Clinical Features. W. A. Brams and A. Gropper, Chicago.—p. 246.

Cardiac Review of 1939. N. Flaxman, Chicago.—p. 253.

Progressive Medical Education. E. M. Stevenson, Bloomington.—p. 262.

Laboratory Aids in Differential Diagnosis of Coma. L. Gerber, Peoria.—p. 263.

Acute Gangrenous Appendicitis Associated with Embolic Occlusion of Coronary Artery: Case Report. J. D. Kirshbaum and L. Perlman, Chicago.—p. 267.

Foreign Bodies in Vermiform Appendix: Report of Case. M. C. Ehrlich, Chicago.—p. 268.

Journal of Neurophysiology, Springfield, Ill.

3:373-466 (Sept.) 1940

Activity in Simplest Spinal Reflex Pathways. B. Renshaw, New York.—p. 373.

Influence of Sensory Systems on Spontaneous Activity of Cerebral Cortex. F. H. Lewy and G. D. Gammon, Philadelphia.—p. 388.

Choline Esterase in Brain and Spinal Cord of Sheep Embryos. D. Nachmansohn, New Haven, Conn.—p. 396.

Central Course of "Recurrent" Sensory Discharges. D. H. Barron, New Haven, Conn.—p. 403.

Intercortical Connections of Corpus Callosum as Indicated by Evoked Potentials. H. J. Curtis, Baltimore.—p. 407.

Analysis of Cortical Potentials Mediated by Corpus Callosum. H. J. Curtis, Baltimore.—p. 414.

Function of Mesencephalic Root of Fifth Cranial Nerve. K. B. Corbin and F. Harrison, Memphis, Tenn.—p. 423.

Oculomotor Nerve and Reflex Dilatation of Pupil. W. D. Seybold and R. M. Moore, Galveston, Texas.—p. 436.

Movements Elicited from Precentral Gyrus of Adult Chimpanzees by Stimulation with Sine Wave Currents. M. Hines, Baltimore.—p. 442.

Military Surgeon, Washington, D. C.

87:197-288 (Sept.) 1940

Federal Cancer Control Program. C. Voegtlin and R. R. Spencer.—p. 197.
State of Medical Literature and Medical Libraries. H. W. Jones.—p. 207.
Medical Control of Mobilization. H. Zinsser.—p. 214.
Experimental Studies in Production of Agglutinins to Bacillus Dysenteriae. J. Felsen and Esther Levenkron.—p. 221.
Colostomies, Their Care and New Type of Colostomy Bag. S. A. Rachlin.—p. 229.
Therapy of Gas Gangrene. L. Cozen.—p. 231.
Gastrocolic and Gastrojejunocolic Fistulas: Report of Five Cases. J. R. Thomas.—p. 232.
Hand Cart or Trailer for Movement of Medical Equipment. E. S. Linthicum.—p. 243.
Gunshot Wounds of Face and Jaws: First Aid Treatment, Field Service. R. A. Stout.—p. 247.
Practical Portable Light for the Otolaryngologist. S. Peluse.—p. 251.
Malaria, 1940 Maneuvers, Luzon, Philippine Islands. H. B. McMurdo.—p. 252.
The Dermatologist in the Military Organization. L. Goldman.—p. 256.
Pedanius Dioscorides: Military Surgeon Under Nero. D. G. Friend.—p. 260.
Dr. Thomas Archer: An Obstetric Landmark. J. M. Phalen.—p. 262.

Minnesota Medicine, St. Paul

23:609-680 (Sept.) 1940

Prevention and Treatment of Genital Prolapse. F. L. Adair, Chicago.—p. 609.
*Local Use of Sulfathiazole in Treatment of Staphylococcic Infections: Preliminary Report. W. W. Spink and J. R. Paine, Minneapolis.—p. 615.
Air-Borne Pollen in the Twin Cities Area with Reference to Hay Fever. C. O. Rosendahl, R. V. Ellis and O. A. Dahl, Minneapolis.—p. 619.
*Management of Tetanus: Report of Use of Hyperthermia in One Case. P. H. Heersema, Rochester.—p. 636.
Communicated Insanity: Instance of Folie à Cinq. T. L. L. Soniat and B. F. Smith, Rochester.—p. 641.
Medical and Surgical Treatment of Prostatism. G. J. Thompson, Rochester.—p. 645.

Local Use of Sulfathiazole for Staphylococcic Infections.—Spink and Paine applied sulfathiazole directly to the staphylococcic lesions of sixteen patients. Staphylococcus aureus was isolated from every lesion. Depending on the site of the lesion, immobilization and elevation of the infected area were used to enhance circulation. Adequate surgical drainage and débridement of devitalized tissue were utilized. Sulfathiazole was applied directly to the lesions to permit a much higher local concentration of the drug than could be obtained when given orally. Acutely ill patients were also given sulfathiazole orally. This procedure was directed against a possible bacteremia and to prevent an extension of the primary focus. To prevent the inhibitory action of bacteria, exudate and necrotic tissue on sulfathiazole the wounds were irrigated frequently with warm saline solution and, following each irrigation, sulfathiazole was used in the wound in crystal form, 1 per cent aqueous solution or as wet packs. In a few cases, particularly those in which there were carbuncles, irrigations with hypochlorite solution aided considerably in removing purulent and sloughing material. The results were as follows: Of the four cases of carbuncle, three granulated in without cutaneous grafts and the results in the other one is doubtful; the six operative wound infections healed and became sterile; in one, decubitus ulcer grafts were successful after two previous attempts had failed, one corneal ulcer healed and became sterile, one of two chronic osteomyelitis lesions showed extensive osseous repair and the result in the other is too recent to draw any conclusion, the number of organisms was reduced in one pyopneumothorax but the cavity is not sterilized and there was improvement of the subcutanous abscess but the patient died of leukemia.

Management of Tetanus.—Heersema reports the first case of tetanus in which hyperpyrexia was used in its management. In eight days the patient's condition had progressed to the point of acute continuous pain and inability to swallow, when hyperpyrexia was suggested by Woltman in the hope of increasing the neutralizing effect of the antitoxin. The patient was given four hours of artificial fever produced by physical means, with a systemic temperature ranging between 105 and 106 F. He tolerated the fever treatment very well after the first hour and it had the definite effect of relaxing his muscles. Because of the beneficial effect of relaxation he was placed in a pack at the end of the second fever session and allowed to cool off over a period of four or five hours. This continued throughout twelve fever sessions. Each of the sessions was tolerated progressively better. They were given at intervals of approximately two days. When the patient was seen two and a half months after the nail wound which caused the tetanus, he reported complete recovery. The method must rest for the present on its merits as a means of symptomatic control of the painful spasms of tetanus which constitute, through exhaustion, the greatest problem and danger of this infection. Relief from the terrifying spasms, even at the cost of any discomfort from the hyperpyrexia, was welcomed by the patient and throughout the entire course he was able to be more cooperative on smaller amounts of hypnotics than is usually experienced. The more cooperative attitude of the patient is believed largely attributable to his relative freedom from fear and panic during the sessions of fever. The author believes that the symptomatic relief obtained is sufficient to warrant further trial of the method. The possible relationship of ascorbic acid and hyperpyrexia to tetanus toxin is suggested in that the fever may speed up an ascorbic acid reaction of detoxification of the tetanus infection.

Missouri State Medical Assn. Journal, St. Louis

37:369-408 (Sept.) 1940

Pain Relief in Labor. J. W. Harris and R. M. Waters, Madison, Wis.—p. 369.
Intrathyroid Therapy for Hyperthyroidism: Secondary Report. F. M. Postlethwaite, Kansas City.—p. 372.
Advances in Treatment of Cancer of Corpus Uteri. H. S. Crossen, St. Louis.—p. 376.
Oxyuriasis and Appendicitis: Unusual Case. J. B. Carlisle and R. M. Carrel, Sedalia.—p. 386.
Nonoperative Treatment of Head Injuries. D. F. Coburn, Kansas City.—p. 387.
The Large Baby. W. D. Hawker, St. Louis.—p. 389.
Evaluation of Kahn Test Procedure in St. Louis: Preliminary Report of Thirty-One Medical Institutions. N. Nagle and J. C. Willett, St. Louis.—p. 391.
Spastic Colon. O. S. Jones, St. Louis.—p. 393.
Prontosil in Pneumothorax. L. Schlenker, St. Louis.—p. 397.

New England Journal of Medicine, Boston

223:353-390 (Sept. 5) 1940

Experimental Human Scurvy. J. H. Crandon, C. C. Lund and D. B. Dill, Boston.—p. 353.
Alpha and Beta Neutral Ketosteroids (Androgens): Preliminary Observations on Their Normal Urinary Excretion and Clinical Usefulness of Their Assay in Differential Diagnosis. N. B. Talbot, A. M. Butler and Elsie A. MacLachlan, Boston.—p. 369.
Reliability of Leukocyte Count in Diagnosis of Appendicitis. A. S. Johnson, Springfield, Mass.—p. 373.
Clinical Neurology. J. B. Ayer, Boston.—p. 376.

223:391-438 (Sept. 12) 1940

Care of the Back Following Spinal Cord Injuries: Consideration of Bedsores. D. Munro, Boston.—p. 391.
*Tuberculosilicosis. L. Benson, Pittsford, Vermont.—p. 398.
*Hypotension: The Ideal Normal Blood Pressure. S. C. Robinson, Chicago.—p. 407.
Symptom of One-Sided Affection of Lungs and of Mediastinum. L. Hess, Brookline, Mass.—p. 417.
Pediatrics. R. C. Eley, Boston.—p. 418.

Tuberculosilicosis.—Benson reports observations on 207 employees in the granite industry who had silicosis complicated by pulmonary tuberculosis. These observations point to free silica as the substance which increases the liability to tuberculous infection. The silica is believed to act as a chemical irritant of pulmonary tissue. Evidence points to a decrease in tissue resistance to tubercle bacilli in cases of silicosis. The diagnosis of tuberculosilicosis requires the existence of a silicosis hazard. The occupational history must show the presence of dangerous concentrations of free silica in the breathing air level. This danger limit in the granite industry is usually set at 40,000,000 particles per cubic foot of air. Average dust counts in the granite-cutting trade have ranged from approximately 60,000,000 particles per cubic foot of air for hand pneumatic tool operators to less than 10,000,000 for attendant laborers. Another contribution toward the diagnosis of tuberculosilicosis is the detection of a high local rate of pulmonary tuberculosis in an industry and its environment. The onset of tuberculous infection in silicotic patients may be accompanied by no symptoms, by a general indisposition or by an explosive widespread dissemination of the disease process. The com-

monest symptom is dyspnea. The patient becomes conscious of a breathing effort that he had not noticed previously. Cough, expectoration, chest pain and hemoptysis often accompany the onset of tuberculous infection in silicosis. In the roentgenologic picture of tuberculosis the linear apical shadows that may be present seem to be broader than those noted in cases of pulmonary tuberculosis without silicosis. Unless these are in the top lung fields, tuberculosis with silicosis is difficult to differentiate from conglomerate silicosis. The only absolute clinical proof of tuberculosis is the discovery of tubercle bacilli in the sputum. There appears to be high correlation between the x-ray evidence of cavities in tuberculosilicosis and tubercle bacilli in the sputum. The commonest clinical form of tuberculosilicosis seen in granite workers is that in which there is a slow progression of the infectious process. Many of these cases suggest that silicosis is superimposed on inactive tuberculosis. The chronic course seems to follow the reactivation of the old lesions and begins chiefly in the upper lobes and extends to the lower fields. The consolidation increases yearly, and basal infiltration is quite common. There are cough, dyspnea, distorted thorax and later purulent expectoration. The patients are usually afebrile but have toxic symptoms off and on. The sputum is ordinarily negative until the terminal months but may be positive intermittently. Preemployment examinations to detect respiratory disease before the worker can be exposed to silica dust are of value in the prophylaxis of tuberculosilicosis. The treatment of tuberculosilicosis is the same as that of pulmonary tuberculosis.

Hypotension: The Ideal Normal Blood Pressure.—According to Robinson, hypotension has been looked on as a disease entity. The "low blood pressure" person was described as one who lacked stamina, tired easily, complained of cold extremities and showed an inability to do prolonged mental or physical work. The author is not concerned with such diseases as Addison's disease, coronary thrombosis, status lymphaticus, shock or infectious diseases which may be accompanied by low blood pressure. The dividing line between normal and hypotensive pressure has never been unanimously agreed on. The upper limit of systolic hypotension has been put as high as 120 mm. and as low as 90 mm. Because the 110 mm. level is chosen by about half the observers, the author has selected it as the point below which all pressures are tentatively called hypotensive. He does not imply that this level makes any significant division in the realm of blood pressure. The level of diastolic pressure below which hypotension is said to exist is not so frequently suggested. Because the 70 mm. diastolic level corresponds statistically to the 110 mm. systolic level, it has been selected for the purpose of this report as the upper level of diastolic hypotension. Hypotension is not a rare occurrence. In a series of 10,883 persons representative of an urban group the age standardized incidence of systolic pressures under 110 mm. was 25 per cent and that of diastolic hypotension 34 per cent. Robinson finds that age has a negligible effect on the distribution of low systolic blood pressure in men up to the seventh decade; thereafter the incidence decreases. Young women have a much higher incidence of low blood pressure than do men, and old women have about the same incidence as do old men. Hypotension is commonest among the linear built or narrow chested type. It is two or three times commoner among lightweight than among heavyweight men and women. Low blood pressures show a smaller and less erratic yearly variation and do not vary over as great a range as do high pressures. They do not tend to rise with age; rather they maintain an even level. They are associated with a mortality rate lower than that of average pressures. The symptoms usually ascribed to hypotension are in reality commoner among hypertensive persons. There are no symptoms peculiar to or due to low blood pressure. Neither fatigue nor vitality is a function of the level of blood pressure; rather they are related to the daily physical activity of the individual. In fact, those persons noted for endurance, vitality and well-being, trained athletes, farmers and other active groups, are also noted for their high incidence of low blood pressure. Hypotension is not a disease; it is an ideal blood pressure level.

New York State Journal of Medicine, New York

40:1275-1346 (Sept. 1) 1940

Fractures Into and Around Knee Joint. C. M. Allaben, Binghamton.—p. 1279.
Fractures Involving Shoulder Joint. E. T. Wentworth, Rochester.—p. 1282.
Fractures of Elbow. R. S. Farr, Syracuse.—p. 1288.
Fractures of Ankle. B. E. Obletz, Buffalo.—p. 1291.
*Comparison of Bellabulgara and Other Forms of Medication in Treatment of Chronic Encephalitis. Josephine B. Neal and S. M. Dillenberg, New York.—p. 1300.
Bacillary Dysentery Due to Bacillus Alkalescens. J. Felsen and W. Wolarsky, New York.—p. 1303.
Staphylococcus Aureus Septicemia. O. W. H. Mitchell and O. D. Chapman, Syracuse.—p. 1308.
*Picrotoxin Treatment of Barbiturate Poisoning. E. C. Reifenstein Jr., Syracuse.—p. 1312.
Electrically Induced Convulsions in Treatment of Mental Diseases. R. Almansi and D. J. Impastato, New York.—p. 1315.
Certified Milk—Yesterday and Tomorrow. S. A. Cohen, New York.—p. 1317.

Bulgarian Belladonna and Other Medication in Chronic Encephalitis.—According to Neal and Dillenberg, the Matheson Commission for encephalitis research began about two years ago the use of white wine decoction of Bulgarian belladonna in treating patients with chronic encephalitis. When it was found that this decoction deteriorated on standing, a tablet was prepared to insure a stable preparation. Approximately 100 patients have been treated with these preparations and with the tablets. Practically all of these patients had previously tried other forms of symptomatic treatment, such as scopolamine, stramonium, amphetamine sulfate or combinations of these medications. The results with the Bulgarian belladonna were far superior to those obtained with any other form of symptomatic treatment. About one third can be considered greatly improved, one half moderately improved and the remainder slightly improved. Many of the patients have been under treatment for at least a year and a half, and the improvement has been maintained. In certain cases the improvement is increasing. It was possible to make a comparative study between twenty-three patients treated with tablets of Bulgarian belladonna and twenty-one treated with a synthetic preparation containing about 0.5 mg. of alkaloids in the following combination: hyoscyamine 0.45 mg., atropine 0.037 mg. and scopolamine 0.012 mg. All patients were in a far advanced stage of chronic encephalitis and all had previously received various forms of medication. The severity of encephalitis was as nearly equal as possible in the two groups. The results obtained with the tablets of Bulgarian belladonna were far superior to those with the synthetic preparation. All except three of them showed subjective improvement. They felt stronger, slept better, had less feeling of tension and were more cheerful and cooperative. Objectively there was an improved facial expression, less spasticity and tremor, greater facility in motion, and improvement in speech. Increased salivation was entirely relieved in practically all cases. The improvement of the patients treated with the synthetic preparation was similar but not so marked. The synthetic preparation produced toxic effects more frequently, more severely and with smaller doses than did the Bulgarian belladonna. It is interesting that, when the comparative study was ended and the patients were returned to the previous medication, almost all of those treated with tablets of Bulgarian belladonna requested that these tablets be continued, whereas the patients who had received the synthetic preparation for the most part accepted the return to the former medication without comment. The authors conclude that Bulgarian belladonna is the most beneficial drug available in the treatment of chronic encephalitis.

Picrotoxin Treatment of Barbiturate Poisoning.—Reifenstein calls attention to a previous publication in which he described two cases of barbiturate poisoning treated with picrotoxin and presents a third case in which recovery from a lethal dose of phenobarbital occurred with no antidotal treatment except picrotoxin. The patient was given one of the largest reported doses of picrotoxin (559 mg.) without harmful effect and he failed to exhibit the depressed blood pressure usually observed in acute barbiturate poisoning. He was 25 years of age, weighed 146 pounds (66 Kg.) and had taken from 6 to 8 Gm. of phenobarbital with suicidal intent. He remained untreated for fourteen hours and was found in a deep coma. He

failed to respond to physical stimulation. He was treated continuously for seventy-eight hours with intravenous injection of picrotoxin, alternating with intravenous administration of sucrose. He received a total of 559 mg. of picrotoxin and 1,250 cc. of a 50 per cent solution of sucrose. This case furnished additional evidence that picrotoxin is an effective antidote of acute barbiturate poisoning.

Philippine Medical Association Journal, Manila

20:395-440 (July) 1940

Hypoglycemic Effect of Decoction of Lagerstroemia Speciosa Leaves (Banaba) Administered Orally. F. Garcia, Manila.—p. 395.
Ligation of Internal Iliac Arteries (Hypogastric Arteries) in Prostatic Hypertrophy. C. D. Franco and P. T. Nery, Manila.—p. 403.
Studies on Vitamin C: VII. Blood Ascorbic Acid Content in Pregnancy and Lactation. Solita F. Camara and I. Concepcion, Manila.—p. 407.
How Safe and Effective Is Spinal Anesthesia? B. R. Diño and S. C. Meñez, Manila.—p. 411.

Public Health Reports, Washington, D. C.

55:1517-1554 (Aug. 23) 1940

*Disabling Morbidity and Mortality from Cancer Among Male Employees of Oil Refining Company, with Reference to Age, Site and Duration, 1933-1938, Inclusive. W. M. Gafafer and Rosedith Sitgreaves.—p. 1517.
Experimental Transmission of Trypanosoma Cruzi Infection in Animals by Triatoma Sanguisuga Ambigua. A. Packchanian.—p. 1526.

55:1555-1598 (Aug. 30) 1940

Diagnosis Code for Use in Tabulating Morbidity Statistics. T. Parran and W. L. Austin.—p. 1558.
Distribution of Selenium in Plasma and Liver Proteins and Its Fractionation in Tryptic Liver Digests. B. B. Westfall and M. I. Smith.—p. 1575.

55:1599-1646 (Sept. 6) 1940

Rheumatic Heart Disease in Philadelphia Hospitals: Study of 4,653 Cases of Rheumatic Heart Disease, Rheumatic Fever, Sydenham's Chorea and Subacute Bacterial Endocarditis Involving 5,921 Admissions to Philadelphia Hospitals, from Jan. 1, 1930, to Dec. 31, 1934. O. F. Hedley.—p. 1599.
Factors Influencing Efficacy of Phenolized Rabies Vaccines: I. Strains of Fixed Virus. K. Habel.—p. 1619.
Care of the Feet.—p. 1631.

55:1647-1706 (Sept. 13) 1940

Rheumatic Heart Disease in Philadelphia Hospitals: Study of 4,653 Cases of Rheumatic Heart Disease, Rheumatic Fever, Sydenham's Chorea and Subacute Bacterial Endocarditis, Involving 5,921 Admissions to Philadelphia Hospitals from Jan. 1, 1930, to Dec. 31, 1934: II. Age, Race and Sex Distribution and Interrelation of Rheumatic Fever, Sydenham's Chorea, Rheumatic Heart Disease and Subacute Bacterial Endocarditis. O. F. Hedley.—p. 1647.

Cancer Among Male Employees of Oil Refining Company.—Gafafer and Sitgreaves studied the records of the members of a sick benefit plan connected with an oil refining company. The study covers a period of six years, from 1933 to 1938, during which there was approximately 60,000 years of membership for the male employees. There were seventy cases of cancer, forty-six of which ended in death. The cases which did not end in death terminated in recovery or insufficient improvement for return to work. The forty-six deaths yield an average annual death rate of 0.78 per thousand. The population exposed represents an age distribution ranging approximately from 15 to 69 years. The calculated crude death rate from cancer for white males from 15 to 69 years of age throughout the entire United States for the years 1933 to 1937 is 0.96 per thousand, while the experience of the industrial department of a large life insurance company for 1935 gives a rate of 0.86. Although previous studies have indicated that certain types of mineral oils possess carcinogenic activity, the present experience is therefore not unfavorable. Relatively more cancers of the digestive system occurred among the employees studied (thirty-two, or 69.6 per cent of the deaths) than occurs among the total population. The proportion of cancers of the genitourinary system was somewhat less, 8.7 per cent as compared to 15 per cent. There were five cancers of the respiratory system, three of the buccal cavity and two of other sites. Study of the duration of disability of all cases reveals that among the thirteen cases of cancer of the oral region seven caused disability of less than twenty-eight days and that none of these were fatal. One death was recorded among three cases lasting from twenty-nine to ninety-one days, and the two patients whose disability lasted longer than 182 days died. A corresponding relationship is observed for cancer of the trunk and extremities. However, the reverse is true for cancer of the lung. The five deaths among the eight cases recorded for this site all occurred during the interval of from twenty-nine to 182 days. If the average durations of the fatal and of the nonfatal cases are arranged in order of decreasing magnitude by specific site, the two arrays show that the lungs come first in the array of nonfatal cases with an average case duration of 359.3 days. This site is last in the array of fatal cases with an average case duration of 90.6 days. The reverse holds for cancer of the trunk and extremities and of the oral region. These are first and second in the arrangement of fatal cases with average durations of 263 and 249 days respectively and at the bottom of the array of nonfatal cases, with average durations of seventy and 36.3 days.

Southern Medical Journal, Birmingham, Ala.

33:911-1014 (Sept.) 1940. **Partial Index**

Sulfathiazole in Treatment of Gonorrhea: Preliminary Report. E. G. Ballenger, H. P. McDonald and R. C. Coleman Jr., Atlanta, Ga.—p. 911.
*Studies on Epidemiology of Oxyuriasis. W. Sawitz, J. S. D'Antoni, K. Rhude and S. Lob, New Orleans.—p. 913.
*Incidence of Pinworm (Enterobius Vermicularis) Infection in North Carolina. H. W. Brown, A. J. Sheldon and T. Thurston, Chapel Hill, N. C.—p. 922.
Local Protection or Immunity with Evidences of Experimental Application. W. H. Harris and Shirley Walther, New Orleans.—p. 925.
Study of Incidence of Air-Borne Molds and of Skin Sensitivity to Molds. Edna S. Pennington, Nashville, Tenn.—p. 931.
Use of Pontocaine in Spinal Anesthesia: Report Based on 1,710 Consecutive Cases. E. B. Robinson Jr., Fairfield, Ala.—p. 955.
Prophylactic Use of Tetanus Antitoxin: Analysis of 500 Cases. C. E. Newell, Chattanooga, Tenn., and C. McVea, Baton Rouge, La.—p. 962.
Transfusion in Infants. J. E. Burch, Miami, Fla.—p. 972.
Role of Vitamin K in Etiology, Prevention and Treatment of Hypoprothrombinemia and Hemorrhagic Diathesis of the Newborn. W. W. Waddell Jr., D. Guerry 3d and M. Birdsong, University, Va.—p. 974.
Vaginal Discharge During Pregnancy. A. P. Hudgins, Charleston, W. Va.—p. 979.
Radiation Therapy as Aid in Diagnosis and Treatment of Certain Abdominal Tumors. E. A. Merritt and R. M. Caulk, Washington, D. C.—p. 989.
Doubt: A Healthy State of Mind. W. W. Young, Atlanta, Ga.—p. 991.
Physical Requirements for Entrance and Supervision of the Health and Welfare of Students During the Medical Course. H. D. Moor, Oklahoma City.—p. 995.
The Hospital's Responsibility for Training of Interns and Residents. F. R. Bradley, St. Louis.—p. 1000.
Publicity's Place in the Public Health Program. J. M. Gibson, Montgomery, Ala.—p. 1003.

Epidemiology of Oxyuriasis.—Sawitz and his associates examined 491 inmates of six children's homes for Enterobius vermicularis. The National Institute of Health swabs were used for examinations. The total incidence of infection was 74.3 per cent; the highest in one home being 96.9 per cent, and the lowest in another was 15.9 per cent. The incidence among the 278 white boys was 89.6 per cent, among the eighty-seven white girls 60.9 per cent, among the sixty-three Negro boys 84.1 per cent and among the sixty-three Negro girls it was 15.9 per cent. The incidence by age showed an increase during the first six years of life. It remained high until the fourteenth year and then decreased. The incidence by age and sex showed a slightly lower incidence in girls than in boys under comparable environmental conditions in the first six years of life, an equally high incidence up to nine years and then the incidence decreased among girls but remained high among boys until the age of 15 or more. The incidence by age and race showed no difference if groups of the same age and sex and under the same environmental conditions were compared. Among children of comparable age it was more than twice as high among those in large dormitories as among those in single or double rooms. Enterobius eggs were recovered from pajama pants, bed sheets and ledges of pillars, windows and doors of dormitories and toilet rooms. The usual hygienic measures such as frequent house cleaning, change of underwear and bed sheets and frequent bathing did not interrupt the important transmission routes of Enterobius. A cleanliness period of six weeks in one home did not result in any decrease in the infection. The Enterobius incidence among children biting their fingernails was no greater than among others. No correlation was found between Enterobius incidence and the amount of money spent for the maintenance of

the institution or for the food of the children. The important transmission route of Enterobius vermicularis appears to be by direct contact with infected individuals or contaminated objects. The incidence by age is tentatively explained as follows: Infection in the first year of life is exceptional because babies usually remain in separate beds and have no prolonged contact with other children. From 1 through 5 years of age the incidence increases with age, but the children are washed and taken care of. From 6 years on the incidence runs highest as the children come in close contact with one another during school or play, and although they wash themselves they do not do so effectively. The incidence continues to be high unless separate bedrooms or rigid personal cleanliness control the infection. These factors become operative earlier in the lives of girls than of boys.

Pinworm Infection in North Carolina—Brown and his colleagues endeavored to determine the prevalence of pinworm infection in North Carolina by examining the following groups of individuals: (1) 132 white boys from 8 to 14 years of age from the Charlotte Observer Fresh Air Camp, (2) 100 white and Negro patients of all ages at the Duke University Hospital outpatient clinic who were not seeking aid due to symptoms referable to pinworms and (3) 118 male students aged from 17 to 31 years attending the University of North Carolina. All specimens were obtained by means of the National Institute of Health swab. Single swab examinations made on the 132 white boys revealed a pinworm infection rate of 32.8 per cent. Considerable variation was encountered; for example, 25 per cent of the 10 year old boys were found to be infected, while the 13 year old boys showed a rate of 50 per cent. Of the 100 patients sixty-seven were white and thirty-three were Negroes. Both children and adults were included in the group which was definitely of the lower income group. A total of 7.4 per cent of the white patients were infected. However, a rate of 16.6 per cent was revealed among the white patients between 0 and 19 years of age, while only 2.3 per cent of those 20 years or older were infected. Not a single pinworm infection was found among the thirty-three Negroes examined and likewise none among the university students, although special care was taken in their examination. Additional epidemiologic investigations are needed to show why pinworm infection was not found among the Negro outpatients. It is possible that the Negro may be partially immune to pinworm infection as he is to hookworm infection.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

48:537-590 (Sept.) 1940

The Most Important Professional Disease—Coronary Sclerosis. T. Leary, Boston.—p. 537.
Culture of Human Marrow: Summary of Studies to Date. E. E. Osgood, Portland, Ore.—p. 540.
Anatomic Classification of Goiter. W. C. MacCarty, Rochester, Minn.—p. 550.
Warthin's Diathesis in Acute Toxic Goiter. J. K. McGregor, Hamilton, Ont.—p. 556.
Cardiospasm: Report of Case and Discussion of Improper Treatment. W. B. Faulkner Jr., San Francisco.—p. 561.
*Treatment of Massive Hemorrhage from Peptic Ulcer. C. S. Stone Jr., Seattle.—p. 564.
Gastric and Duodenal Ulcer: Simplified Technic for Gastric Resection. D. E. Ross, Los Angeles.—p. 571.
Pilonidal Sinus. C. M. Burgess, Honolulu, Territory of Hawaii.—p. 581.
Perineural Fibrosarcoma of Left Vagus Sheath: Report of Case. E. D. Furrer and I. R. Fox, Eugene, Ore.—p. 584.

Treatment of Massive Hemorrhage from Peptic Ulcer.—Stone reviews the twenty year experience of the Mason Clinic with massive hemorrhage from peptic ulcer. A total of fifty-seven such cases among the 1,076 examined for peptic ulcer were so designated because they were sufficiently severe to produce hematemesis or melena, fall in blood pressure, pallor and perhaps syncope. There were nine deaths, a mortality of 15 per cent and an incidence of seven massive hemorrhages and one death from hemorrhage for each 10,000 admissions to the clinic. This explains why death from massive hemorrhage has been considered rare in a practice limited to private patients. Thirty-five of the patients were less than 50 years of age and three of these died, one of hemorrhage from a jejunal ulcer and two from unrelated causes after the cessation of bleeding but while the patients were still in the hospital. Six of the remaining twenty-two patients who were more than 50 years of age died, giving a mortality of 27 per cent for this age group. All these patients died of exsanguination, two following late surgery. The author is in accord with the many internists and surgeons who now believe that early surgical intervention is indicated in these older patients. However, the true value of early surgical intervention will not become apparent until comparative figures are available for this age group. There are certain limitations beyond which surgery cannot go. Some patients in this group will die of hemorrhage before surgical intervention is possible. Many of the patients in this older group will be very poor surgical risks at best, and their chance of surviving radical surgery will be less than the probable two in three chances of surviving a profuse hemorrhage. Surgical judgment must play a great part in selecting them for emergency operation as well as in the choice of the operative procedure. The surgeon must be willing to accept a high risk if he hopes to reduce a mortality of 30 per cent. Technical difficulties will at times prevent satisfactory and permanent control of hemorrhage. The almost always fatal result among patients seen after prolonged hemorrhage justifies an attempt to control the hemorrhage by some direct surgical procedure. Recent advances in the care of depleted patients and in the prevention of complications may improve the results of late surgical intervention in the course of bleeding. The approximate mortality of 30 per cent among patients more than 50 years of age indicates the seriousness of massive hemorrhage from peptic ulcer and is a definite challenge to those who advocate conservative treatment for these patients. The infrequency of cases of massive hemorrhage from peptic ulcer in private practice suggests that an approach to this problem must be based largely on the combined reports from other sources. Recurrent profuse hemorrhage demands surgical intervention.

Wisconsin Medical Journal, Madison

39:701-796 (Sept.) 1940

Sex Hormones. A. A. Werner, St. Louis.—p. 717.
Cholecystostomy versus Cholecystectomy and Instrumental Dilation of Papilla of Vater. A. L. Mayfield, Kenosha.—p. 724.
Management of Carcinoma of Cervix. A. H. Curtis, Chicago.—p. 728.
Severe Hyperemesis Gravidarum with Avitaminosis: Report of Two Cases. C. J. Lund, Madison.—p. 731.
*Karaya and Related Gums as Causes of Atopy. S. M. Feinberg, Chicago, and B. B. Schoenkerman, Milwaukee.—p. 734.

Karaya and Related Gums as Causes of Atopy.—Feinberg and Schoenkerman encountered ten patients whose allergic symptoms were attributable to karaya and related gums. The ten patients were women; the source of exposure of eight of them was the hair-setting fluid or powder used in their hair; one was a hair dresser and the source of contact of the other one was the women visiting her shop after having their hair dressed in a nearby establishment. Of these ten patients, eight were tested with acacia; only one gave a slight positive reaction. Nine were tested with tragacanth; two showed slightly positive reactions. In four karaya gum was the sole cause of the allergic symptoms; in the others, additional causes played a part, particularly pollen and fungi. The allergic symptoms of three of these women were entirely those of rhinitis; asthma was the predominant symptom of six, although rhinitis was also present in some of the latter. One of the women with asthma also had a dermatitis of the face and scalp which was attributable to the gum. The sole complaint of one woman was a dermatitis of the face and neck. Although the dermatitis was caused by contact it was of the atopic variety, as indicated by the presence of the positive scratch test and of circulating reagins. Eight women obtained a complete cure or subsidence of symptoms due to this allergen by substitution of other ingredients in the preparations employed for the hair. Desensitization, with only partial results, was employed for one, and lack of cooperation and the presence of complicating allergy in the remaining patient resulted in failure. The authors state that, because of the wide use of these materials in cosmetics, numerous foods, pastes, constipation remedies and many other products many more instances of this type of allergy will undoubtedly be found. The possibility of other water soluble gums in industry as a source of allergy must not be overlooked.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:245-274 (Aug. 24) 1940

*Pulmonary Tuberculosis in Recruits: Experiences in a Survey by Microradiographic Method. E. L. Cooper.—p. 245.
*Serum and Plasma in Treatment of Hemorrhage in Experimental Animals. J. W. Magladery, D. Y. Solandt and C. H. Best.—p. 248.
Experience in Treatment of War Burns. S. M. Cohen.—p. 251.
Abdominal Actinomycosis Treated with Sulfapyridine. W. H. Ogilvie.—p. 254.
Effect of Explosion Blast on Lungs: Report of Case. S. T. Falla.—p. 255.
Probable Effect of Therapeutic Injection of Serum on Agglutination Tests for Leptospiral Infection. J. M. Alston.—p. 256.

Pulmonary Tuberculosis in Recruits.—According to Cooper, the discovery of cadets with active pulmonary tuberculosis induced the medical directorate at the Australian army headquarters to consider the possibilities of a mass survey of recruits. He points out that the microroentgenographic method developed chiefly by Manuel de Abreu in Rio de Janeiro is especially valuable for mass examinations. In an appendix he describes the equipment used for the miniature x-ray examination and in another one the procedure employed for the miniature roentgenography of the chests of recruits. Every small film (35 mm.) is examined by at least one physician and one radiologist. Usually more than two medical men are present during the viewing of films. Whenever anything abnormal is detected in the 35 mm. film a large roentgenogram is taken next day. No man is rejected on the small film alone. The 14 by 17 inch film is reported on by a physician and a radiologist, and the large film, with the report, is made available to a medical board consisting of two physicians. No man is discharged from the Forces on x-ray observations alone: in every instance in which x-ray examination suggests tuberculosis a case history is recorded and the chest is reexamined by two physicians. If any sputum can be obtained it is examined for tubercle bacilli by staining and culture. About 9,000 recruits were examined personally by the author and this report deals with the conclusions drawn from these 9,000 films. It takes some time to become accustomed to reading the small films. Both the intensity of illumination and the character of the surface on which the films are projected make an appreciable difference. Each radiologist has an optimal distance from the projection screen at which the image appears most like the large chest films to which he is accustomed. Some abnormalities are detected more easily at a distance of from 8 to 10 feet, but for routine reporting a distance of 6 feet suits most. The small films can be projected up to a size of approximately 12 by 14 inches without loss of detail. Enlargement to the 14 by 17 inch size is not always possible. The maximum number of 35 mm. films reported by a group was about 1,000 in an evening of three hours. As fatigue occurs rapidly the practice was adopted of one radiologist reporting on not more than from seventy to 100 successive chests without relief by one of the others present. A comparison between the 35 mm. pictures and the 14 by 17 inch film demonstrates that there are factors operating in the microroentgenographic technic which result in variations from what is generally regarded as a normal chest roentgenogram. In 541, or 6 per cent, of the 9,000 recruits 14 by 17 inch films were ordered. Four thousand eight hundred and thirty (54 per cent) of the microroentgenograms showed evidence of hilar calcification suggestive of a healed primary tuberculous infection; 120 (1.33 per cent) showed evidence in the lung fields of past or present tuberculous infection of the secondary adult type of tuberculosis; forty-nine recruits (0.55 per cent) showed evidence of active pulmonary tuberculosis. In addition to the cases of pulmonary tuberculosis, other lesions were detected such as a large cyst, two mediastinal neoplasms, several aneurysms of the aorta, congenital polycystic disease and nontuberculous pneumonitis.

Serum and Plasma in Treatment of Hemorrhage.—The stability of serum or plasma and the growing body of evidence that pooled samples can be safely used in human patients of any blood type prompted Magladery and his collaborators to reinvestigate the extent to which these fluids can replace whole blood in the treatment of animals with acute hemorrhage. The study deals with results obtained in fifty-five dogs of from 5 to 15 Kg. in weight. Anesthesia was produced and the animals were prepared in the usual way for the recording of blood pressure and the administration of fluids. After the blood pressure had reached a reasonably steady level and control blood samples had been obtained, bleeding was begun through an arterial cannula at a rate which produced a gradual reduction of the pressure to about 30 mm. of mercury. It soon became apparent that neither the weight of the animal nor its initial blood pressure afforded any precise indication of the quantity of blood which had to be removed before typical posthemorrhagic shock appeared. When enough blood was removed this condition usually developed. It was characterized by a low body temperature and a failure of the blood pressure to rise above the level of from 30 to 50 mm. of mercury after cessation of bleeding. When death was imminent, treatment consisting of application of heat and the intravenous injection of serum or plasma was instituted. Determinations of blood volumes were made by the dye method of Gibson and Evans as adapted to the photoelectric colorimeter (Gibson and Evelyn, 1938), but after many control experiments it became apparent that samples taken more than thirty minutes after the injection of the dye (T 1824) gave unreliable results when the animal was in posthemorrhagic shock. For this reason satisfactory blood volume determinations were secured in only eleven experiments. Cell volumes were determined by the hematocrit. In untreated hemorrhage no animal losing more than 55 per cent of its calculated blood volume recovered without some form of treatment. An attempt was made to compare the efficacy of various blood substitutes. Isotonic saline, hypertonic saline and dextrose solutions were tested. Even when administered in large quantities these solutions produced rises in blood pressure which were so evanescent that they were considered to have relatively little value as blood substitutes. In animals which were treated with their own heparinized blood, it was found that about 40 per cent of the removed blood had to be replaced to secure recovery of an animal in posthemorrhagic shock. Comparable volumes of serum or plasma produce equally satisfactory results. Thus the observations indicate that the volume of the red cells restored to the animal is more important than their oxygen-carrying capacity and that serum and plasma, which can be stored for long periods, are effective blood substitutes for the treatment of hemorrhage. The authors also observed the importance of administering blood or blood substitutes at a rapid rate (from 50 to 100 cc. a minute) and as soon as possible after the hemorrhage.

Journal of Neurology and Psychiatry, London

3:197-292 (July) 1940

Topographic Studies of Disturbances of Sweat Secretion After Complete Lesions of Peripheral Nerves. L. Guttmann.—p. 197.
Alzheimer's Disease: Report of Six Cases. W. H. McMenemey.—p. 211.
Basilar Impression of Skull. A. de Vet.—p. 241.
Study on Pure Word Deafness. R. E. Hemphill and E. Stengel.—p. 251.
Neuronal Differentiation in Implanted Fetal Cortical Tissue. W. E. le Gros Clark.—p. 263.

Lancet, London

2:219-252 (Aug. 24) 1940

Experimental Study of Blast Injuries to Lungs. S. Zuckerman.—p. 219.
*Effects of High Explosive Blast on Lungs. D. M. Dean, A. R. Thomas and R. S. Allison.—p. 224.
*Penicillin as Chemotherapeutic Agent. E. Chain, H. W. Florey, A. D. Gardner, N. G. Heatley, M. A. Jennings, J. Orr-Ewing and A. G. Sanders.—p. 226.
Meningococcic Meningitis Starting as Diabetic Coma. C. W. Ward and A. A. Driver.—p. 228.
Locking Wrist. L. S. Michaelis.—p. 229.
Effect of Venesection on Capacity of Lungs. E. M. Glaser and J. McMichael.—p. 230.

Effects of High Explosive Blast on Lungs.—Dean and his collaborators present a series of twenty-seven cases in which treatment was being given for burns or other injuries resulting from the bursting of high explosive bombs at close quarters. Special attention was given to the state of the chest. In two cases the question of exposure to blast was doubtful.

Only six patients complained of symptoms related to the chest; sixteen showed some abnormal physical signs and fourteen showed abnormal radiologic appearances. Evidence of serious pathologic changes in the chest was absent in all but two cases; in one of these the signs of collapse of a lobe of the lung were present, in the other the signs of a patchy consolidation of the bronchopneumonic type. The relative importance of the three factors to which the patients were exposed—blast, burns and immersion—in relation to the chest conditions is impossible to assess. It will be difficult to find cases in which there are no external injuries. Immersion may have played an important part in one case but this experience occurred in only three and the other two showed neither symptoms nor signs of chest involvement. The authors emphasize the relative disproportion in frequency between the symptoms and physical signs in the cases studied. This may be due to the fact that all were subject of serious injuries which would tend to direct their attention away from the chest. Since chest complications may arise after explosion blast without definite warning symptoms, routine examinations should be performed even in those who are apparently unaffected by the blast. The physical signs that may be expected are diminished movement of the diaphragm, fulness of the chest giving it an emphysematous appearance, and impairment of resonance at one or both bases, with or without crepitations. The frequency of a "blown up" or ballooned appearance of the chest, especially at the lower costal margins after such injuries, may be related to the posture the patients adopted in bed or to the presence of an already existing emphysema, though this seems unlikely since they were all young men and in good health before being injured. This appearance was often associated with diminished movement of the diaphragm. It may be that some true traumatic emphysema results in these cases.

Penicillin as Chemotherapeutic Agent.—Chain and his associates point out that although in recent years interest in chemotherapeutic effects has been almost exclusively focused on the sulfanilamides and their derivatives there are other possibilities, notably those connected with naturally occurring substances. Following studies on lysozyme, it occurred to the authors that it would be profitable to investigate the chemical and biologic properties of the antibacterial substances produced by bacteria and molds. They began their studies with a substance produced by a mold in which Fleming in 1929 had observed antibacterial properties. Fleming noted that a mold produced a substance which inhibited the growth of staphylococci, streptococci, gonococci, meningococci and Corynebacterium diphtheriae but not of Bacillus coli, Haemophilus influenzae, Salmonella typhi, Pseudomonas pyocyanea, Bacillus proteus or Vibrio cholerae. He suggested its use as an inhibitor in the isolation of certain types of bacteria, especially Haemophilus influenzae. He also noted that the injection into animals of broth containing the substance, which he called "penicillin," was no more toxic than plain broth, and he suggested that the substance might be a useful antiseptic. The mold is believed to be closely related to Penicillium notatum. Methods have been devised for obtaining a considerable yield of penicillin and for rapid assay of its inhibitory power. From the culture medium a brown powder has been obtained which is freely soluble in water. It and its solution are stable for a considerable time and, though it is not a pure substance, its antibacterial activity is great. Various tests were done on mice, rats and cats. The tests made it clear that this substance possessed qualities which made it suitable for trial as a chemotherapeutic agent. Therapeutic tests were therefore done on mice infected with streptococci, staphylococci and Clostridium septicum. The general principle has been to keep up an inhibitory concentration of the substance in the tissues of the body throughout the period of treatment by repeated subcutaneous injections. The doses employed have been effective and not toxic; they may have been excessive. The solution contained 10 mg. per cubic centimeter of substance. In the first streptococcic experiment the treatment was continued for only twelve hours. That this was inadequate was shown by deaths occurring during the ten day period. In the second experiment the time of treatment was lengthened with improved results. In this and the two staphylococcic experiments, injections were given every three hours for the first thirty-two or thirty-seven hours and then at longer intervals. In preliminary experiments with Clostridium septicum it was found that the infection could be satisfactorily held in check as long as penicillin was being given (that is, for two days) but that when the administration was stopped the infection developed. In another experiment the injections were given for ten days every three hours for forty-one hours and then at longer intervals, and twice daily for the last two days of the period. No deaths have subsequently occurred (twenty-two days after the beginning of the experiment). The results show that penicillin is active in vivo against at least three of the organisms inhibited in vitro. Penicillin is particularly active against the anaerobic organisms associated with gas gangrene.

Medical Journal of Australia, Sydney

2:77-100 (July 27) 1940

Recognition and Treatment of Difficult Labor. F. L. Wall.—p. 77.
Outbreak of Cerebrospinal Meningitis in a Foundling Hospital: Treatment of Carriers with Sulfapyridine. J. F. Meehan and C. R. Merrillees.—p. 84.

2:101-124 (Aug. 3) 1940

Rheumatic Heart Disease. H. B. Graham.—p. 101.
Mustard Gas, with Special Reference to Eye Lesions. D. R. Gawler.—p. 106.

2:125-146 (Aug. 10) 1940

Chemotherapy of Pneumococcic Infections. A. W. Holmes à Court.—p. 125.
Summary of Recent Knowledge of Clinical Application and Toxic Effects of Sulfanilamide and Sulfapyridine. A. Murphy.—p. 129.
Sulfapyridine in Treatment of Pneumonia: Review of Eighty Cases of Pneumococcic Pneumonia. A. G. Cumpston.—p. 132.

2:147-166 (Aug. 17) 1940

Investigation and Diagnosis of Ethmoiditis. D. G. Carruthers.—p. 147.
Histology of Nasal Polyps. A. D. Gillies.—p. 149.
External Fronto-Ethmosphenoid Approach. H. Kirkland.—p. 149.
Operative Treatment of Ethmoiditis. B. B. Blomfield.—p. 150.
Treatment of Ethmoid Suppuration and Polyposis After Operation. J. P. Findlay.—p. 151.
Perinephritis. I. J. Weyman.—p. 152.

2:167-186 (Aug. 24) 1940

Surgical Treatment of Hemorrhage Associated with Gastroduodenal Ulceration. H. C. R. Darling.—p. 167.
Treatment of Peritonitis. A. E. Lee.—p. 170.
Parkinsonism: Account of Disorder and Its Treatment, with Special Reference to High Atropine Dosage Therapy. J. F. Hughes.—p. 174.

South African Medical Journal, Cape Town

14:271-290 (July 27) 1940

Leukocytosis. S. Zavadier.—p. 273.
Observations on Diabetes. W. J. May.—p. 276.
Treatment of Severe Open Fractures of Shafts of Tibia and Fibula. S. V. Humphries.—p. 280.

Archivos Argentinos de Pediatría, Buenos Aires

14:1-114 (July) 1940

*Problem of Tuberculosis in First Three Months of Life. A. Ariztía.—p. 3.
Delayed Osteopsathyrosis, Exostosis and Local Achondroplasia: Case. J. P. Garrahan, A. Larguia and M. Malenchini.—p. 45.
Idiopathic Anemia of the Newborn. C. Ruiz.—p. 65.

Tuberculosis in Infants Under Three Months.—Ariztía traced the evolution of tuberculous infection in twenty-three infants under 3 months of age born of multiparous underprivileged mothers with advanced pulmonary tuberculosis, most of the mothers (nineteen) dying from tuberculosis within several weeks after delivery. Separation from the mothers at birth, feasible in a number of cases, did not act to prevent infection and death in all cases. An initially grave condition was almost invariably observed in those prematurely born, weighing generally less than 4⅖ pounds (2 Kg.) and presenting manifest indications of congenital debility together with high fever, enlargement of the spleen and liver, pyuria and regurgitations. Tuberculids were also observed occasionally. The author, however, calls particular attention to the cases which initially presented a complete absence of clinical symptoms but had a fatal anticlimax. Neither elevation of temperature, loss of body weight nor clinically observable objective signs occurred at first. The disease evolved slowly and deceptively, manifesting only a localized lesion which either did or did not become generalized. The symptoms appeared only shortly before a fatal termination.

The author emphasizes the diagnostic value of tuberculin tests and x-ray examinations. Tuberculin tests (Pirquet followed up by Mantoux, if Pirquet remained negative) were positive in all cases except two. In one of these only peritoneal tuberculous lesions were discovered at necropsy. The author believes that tuberculosis in infants under 3 months, born of tuberculous mothers, deserves greater attention as its course differs from that of older infants. Since the asymptomatic period is fraught with danger to the child's life, he advises the combined use of the diagnostic aids of tuberculin and x-rays without delay. In one case in which the child had been separated at birth from its mother and the pathologic condition had been positively established by tuberculin tests and x-ray examinations on the forty-fifth day, the symptoms, consisting in fever, loss of weight, splenomegaly and pyuria, did not manifest themselves until the end of the eighth week. Seventeen deaths occurred in the twenty-three cases reported. The type of lesions found is shown in a number of films.

Archivos de Pediatría del Uruguay, Montevideo

11:621-684 (Aug.) 1940. **Partial Index**

*Insulin Lipodystrophy in Diabetic Children. M. L. Saldún de Rodríguez. —p. 642.
*Roger's Disease. B. Delgado Correa and O. Macció.—p. 652.

Insulin Lipodystrophy in Diabetic Children.—Saldún de Rodríguez reports three instances of lipodystrophy in children occurring in the course of the second or the third year of insulin therapy. This incidence occurred in a group of thirty-eight children with diabetes living under fairly satisfactory conditions of proper diet and insulin therapy. The insulin was administered in two or three daily doses of from 2 to 7 units for each injection, or in a daily total dose of 4 or 5 units. The injections were given in the external aspect of either thigh. The lipodystrophic lesions were symmetrical and located at the seat of injections in two cases and in the gluteal region in one case. The author believes that insulin lipodystrophy, either local or at a distance, is due to repeated injections of insulin in the same area in children predisposed to this condition from a disturbance of the nervous system. Injections of insulin make the region less sensitive to pain. For this reason the patient and the family ask the physician to give the injections in the same area. This practice must be avoided in order to prevent the occurrence of lipodystrophy.

Roger's Disease.—Delgado Correa and Macció found interventricular communication of the pure form in forty-one of ninety cases of congenital heart disease. The condition was well tolerated and caused no functional disturbance. Coincidental with this abnormality, there was deaf-mutism in two, mongolism in two, facial asymmetry in one, thoracic abnormalities in three, rickets in three and muscular atrophy in one. Clinical diagnosis of the abnormality was made in thirty-five cases because of the presence of a loud systolic murmur audible over the cardiac area, especially at the left intercostal space, and which did not change in different positions. There was duplication of the second heart tone due to pulmonary hypertension in four cases, cyanosis in seven, dyspnea in eight, polyglobulia in one and precordial pain in one. The roentgenograms of the heart showed enlargement of the ventricles, which was unilateral in fourteen cases and bilateral in twenty-four. The electrocardiogram was normal in cases of interventricular communication of the first and second degrees and showed either right or left ventricular preponderance in cases of interventricular perforation of the third degree. A frequent abnormality was a deep Q wave in the third lead.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

80:1773-1820 (July 23) 1940

*Vitamin B_1 Content of Blood in Healthy Persons and Patients. S. J. E. Pannekoek-Westenburg and A. G. van Veen.—p. 1774.
Stimulation of Heart in Infectious Diseases. R. van Wesel.—p. 1785.

Vitamin B_1 Content of Blood.—Pannekoek-Westenburg and van Veen report studies on the vitamin B_1 content of 390 blood samples of healthy persons and of patients. The determinations were made by Meiklejohn's modification of Schopfer's test. This test estimates the amount of vitamin B_1 by means of its growth-promoting activity on the mucor Phycomyces blakeslecanus. The thiamine values of the blood of healthy natives tallied with those mentioned in the European and American literature. The author regards 5.5 micrograms per hundred cubic centimeters of blood as the limit of B_1 deficiency. In six of the ninety healthy natives the thiamine content was 5.5 micrograms or less. The thiamine content of the blood of 165 patients with nutritional edema was on the whole like that of the healthy persons. Thus it seems probable that there is no relation between the nutritional edema and the thiamine level. However, among a group of twenty-two persons there were thirteen with low values; the fact that these patients had severe anemia with low cell counts is regarded as a possible explanation of the low values. Nineteen patients with manifest beriberi had divergent thiamine values; nine had low values, but some with severe beriberi had normal values. This may be explained by the fact that the patients may have had food with a high B_1 content or even B_1 tablets before they came for treatment, because the natives know the cause of beriberi. Of nineteen patients with polyneuritis of various origins all but two had a normal B_1 level. Of the two patients with low values, one had syphilis and one alcohol polyneuritis. The thiamine values of ten patients with tabes dorsalis was normal. On the basis of these observations the author concludes that the determination of vitamin B_1 in the blood is as yet of no great practical importance.

Acta Chirurgica Scandinavica, Stockholm

84:97-186 (Aug. 24) 1940

Double Gallbladder in Connection with Two Cases. E. Millbourn.—p. 97.
Hemorrhage in Iliopsoas Muscle Causing Injury to the Femoral Nerve: Report of Second Case. A. Tallroth.—p. 124.
Investigations on Anatomy and Function of Ductus Thoracicus. L. Efskind.—p. 129.
Two Cases of Intra-Articular Xanthoma in Knee Joint. H. Cederlund. —p. 143.
*Three Cases of Hyperinsulinism with Hypoglycemia Treated by Removal of Adenomas from the Pancreas. P. Windfeld.—p. 155.
Vascular Changes After Intravenous Injection of Thorium Dioxide. L. Efskind.—p. 177.

Hyperinsulinism Treated by Removal of Pancreatic Adenomas.—Windfeld presents histories of three patients observed at the Rigshospital in Copenhagen exhibiting hyperinsulinism caused by adenoma of the pancreas. All three patients had attacks of severe hypoglycemia which did not yield to dietetic treatment. Mental disturbances were prominent. The attacks occurred especially in the morning before the intake of food but also after physical exertion. Fatigue, lack of desire to work and depression predominate in the beginning, but later acute states of confusion, coma and clonicotonic convulsions appear. Because the attacks resemble epilepsy, these patients are often sent to neurologic and psychiatric departments. Determination of the blood sugar during attacks will reveal the existence of hypoglycemia, and the subsidence of the attack on the ingestion of dextrose will confirm the diagnosis. Whipple emphasizes the following triad of symptoms to be found in all cases of hypoglycemia due to insuloma: (1) periodic nervous disturbances when fasting (2) in connection with hypoglycemia and (3) the favorable effect of the ingestion of dextrose. Whipple considers a case not amenable to surgical therapy if this triad is not present. Before operation is decided on, hypoglycemia from other causes (Addison's disease, Simmonds' disease, myxedema, hepatic disease and so on) must be ruled out. The author points out as especially characteristic the fact that patients with insuloma are nearly always fat in contrast to the thin or cachectic patients of adrenal or hypophysial disorders. Detection of insuloma by roentgenography is almost never possible because of the small size of the tumors; their diameter rarely exceeds 2 cm. and they usually are embedded in the substance of the pancreas. Two of the patients had an adenoma the size of a hazel nut and of a cherry, respectively, in the head of the pancreas. The third patient had two adenomas the size of a large pea in the caudal portion of the pancreas. The author concludes that if attacks of hypoglycemia cannot be warded off by dietetic treatment an operation ought to be advised, for with protracted hypoglycemia irreversible changes gradually take place in the ganglions of the brain with persisting mental disturbances. Furthermore, about one in four of the insulomas removed have been malignant and exhibited a tendency to give rise to metastases.

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The Physician Himself

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BOSTON

There has been much ado in late years about the welfare, physical, mental and spiritual, of the butcher, the baker, the candlestick maker, the rich man, poor man, beggar man, thief, and even the lawyer and the Indian chief. The doctor, however, a vital factor in the campaigning for all these other souls, has been more or less left to look after himself, and, too much engrossed in the problem of helping others, he has too often neglected his own welfare. It is of some of the problems of the doctor, the noblest Roman of them all, that I would like to speak to you today.

Each one of us has his own body, mind and soul to look after but we often seek aid of others of our profession to advise us in all these fields, in fact, much more than we do of friends who are not doctors. In the course of talking with some 600 physicians who have been patients of mine and with the families of as many more, I have gradually become acquainted with some of the peculiar and unpeculiar problems that beset the doctor. This opportunity I have cherished more than any other in my work. Doubtless many of you, too, have had as rich or richer an experience but I hope that what I have to say may here and there bring helpful suggestions.

CARDIOVASCULAR DISEASE AMONG PHYSICIANS

The doctor's heart has become his own chief health concern. The frequency of cardiovascular disease among the physicians of the United States has in recent years been stressed annually in an editorial in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION summarizing the causes of death in the American medical profession. In 1939 there were 3,710 deaths among about 175,000 doctors of medicine. The average age at death was 66 years, which might be worse but should be better. Heart disease was recorded as the cause of death in nearly half of the cases (1,585). Arteriosclerosis (453 cases), pneumonia (370), cerebral hemorrhage (368), cancer (357) and nephritis (174) followed in that order. Diabetes mellitus claimed ninety-one, tuberculosis sixty and aneurysm five. If we include arteriosclerosis, cerebral hemorrhage and aneurysm and at least some of the cases of nephritis along with heart disease as cardiovascular disease, as of course we should do, then the total is very imposing (2,503 out of 3,710), far over 50 per cent, in fact a full two thirds. This is probably more or less the run of other professional men and in business, or perhaps a higher figure. The "cardiac" deaths have risen partly because of changes in customs of diagnostic nomenclature, partly because of greater accuracy and partly because other serious and earlier diseases (especially the infections) are on the wane. Then, too, of course there may be an actual increase. We can't tell yet. Certainly the doctor's life is a hard one and he doesn't have time or energy or initiative enough to lead a physically healthy life. He rarely can or does practice what he preaches. How much this fact has to do with the frequency with which he is hit by serious coronary disease is hard to tell; one may suspect that there is some sort of a connection.

It may be of interest to you to know what kinds of heart disease I have encountered among my own doctor patients, and some of my conclusions about them. Among the last hundred physicians whom I have examined because of symptoms or signs or suspicion of heart trouble, fifty-one had coronary disease with or without complications; only nine of these had hypertension; twenty-three had myocardial infarction without hypertension; ten had angina pectoris on effort only; one had rheumatic aortic regurgitation and angina pectoris, while the diagnosis in eight cases was based on clearcut electrocardiographic evidence alone (bundle branch block or abnormal T waves). Fourteen per cent of the group were hypertensive, nine having also coronary disease; one of the hypertensive patients had mitral stenosis. Third in the etiologic diagnostic list was rheumatic heart disease with 11 per cent; one of these patients had angina pectoris and

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one was hypertensive. The commonest rheumatic valve lesion was aortic regurgitation, comprising 7 per cent of the total cardiac series, uncomplicated by mitral disease in 5; mitral stenosis was diagnosed in 4 per cent. Calcareous aortic stenosis was present in two cases and syphilitic aortitis with aortic regurgitation in one; no case of a saccular aortic aneurysm was encountered. Congenital heart disease (with auricular septal defect), subacute bacterial endocarditis, chronic cor pulmonale, acute cor pulmonale, thyrotoxicosis and "toxic" myocarditis were responsible for one case each. Pericarditis was present in two cases, one neoplastic and one unexplained. Eleven per cent of the patients were in congestive heart failure when I first saw them.

Thus, three fourths of the patients (76 per cent) were thought to have organic disease back of their heart trouble and yet there were a good many so-called functional disorders alone, and many more doctors have told me of or asked questions about their disorders of function (a kind of curbstone consultation) than ever came for examination. Among the hundred analyzed here four had uncomplicated extrasystoles, four had uncomplicated neurocirculatory asthenia (in seven others the neurocirculatory asthenia complicated other conditions); in three there was simply a cardiac neurosis, which in seven others was superimposed on something else; one had an unimportant functional murmur. One of the most interesting groups was that of three cases of auricular fibrillation with apparently normal hearts (two had resulted from excessive use of tobacco); in three other cases auricular fibrillation complicated heart disease. Of other arrhythmias paroxysmal tachycardia was found in four patients with organic heart disease, auriculoventricular heart block in three, and bundle branch block in five, an important finding ascertained only by electrocardiogram.

Eleven of this series of 100 patients had no heart trouble at all, either organic or functional, although they came as suspects. Two had gallstones instead, one had pleurisy, one a hiatus hernia, one a normal electrocardiographic variation, one a displacement of the heart to the left by old phthisis, one unexplained chest pain, one simple hypertension, and three others wholly normal hearts.

INDIVIDUAL PHYSICIANS WITH HEART DISEASE

I should now like to comment briefly on some individual "cardiac" doctors whom I have seen, to emphasize certain points of interest and importance. It is possible to be an excellent physician in good health after years of hard work and rich experience despite the presence of the acyanotic type of congenital heart disease, patency of the ductus arteriosus, for example, present in one of my colleagues. It is possible to live with rheumatic valvular disease a long and useful life with no handicap to health therefrom and even without knowledge of the heart disease until nearly 80, as in the case of our own noted Dr. Herman F. Vickery, who showed at autopsy, after dying of pneumonia at 83, clear evidence of moderate mitral stenosis of rheumatic type. But unfortunately it is also possible to die in youth of acute rheumatic myocarditis superimposed on chronic rheumatic aortic valve disease, as happened to my friend George Reynolds last year, when while very tired he developed a streptococcic sore throat. I have found aortic stenosis of the calcareous type, quite possibly superimposed on old rheumatic valvular disease, in a few doctors, tolerated well for years but finally responsible for severe heart strain in later life. In one of these physicians a moderately loud precordial systolic murmur, causing rejection for insurance in middle age, was allowed to go unchecked after that in the rush of the doctor's life until abrupt left ventricular failure ten or twelve years later called attention to the classic evidence of aortic stenosis. I feel quite sure that annual physical examinations by a sensible colleague after the first discovery of the murmur could have revealed the enlarging heart and impending failure and have resulted in the postponement of disability by earlier reasonable regulation of life and earlier digitalis therapy. Some preventive medicine should certainly have been practiced in his case.

Another lesson I learned, and I suspect that we have all had to learn such a lesson, was in passing off as manifestations of fatigue and nervousness some palpitation and precordial and substernal aching in the case of a middle-aged doctor who showed no abnormality of the heart or aorta by physical examination, fluoroscopy or electrocardiogram but who, a year later, presented a very slight early diastolic murmur along the left sternal border and a positive Wassermann test. Had we bothered to determine his serologic reaction on the first examination we would have been a year ahead on treatment; fortunately he has now done well after three or four years of specific therapy.

A number of doctor friends have allowed themselves to get much too fat and, although a good many escape harmful consequences, only a few live to an advanced age and too many succumb to hypertension or coronary disease before they are old. I am thinking of one of my colleagues from the Smithfield ham and Lynnhaven oyster country who too tardily heeded the advice to reduce his weight and, although he lived a model life after his disability began, barely passed the age of 60, hypertensive coronary cardiovascular disease ending the story. It isn't always possible, of course, to be master of one's fate and the doctor has a peculiarly hard job in looking after himself,

but the utter neglect of their health by so many physicians is appallingly common.

In this connection I would cite one other case, that of a good doctor who had gradually from force of circumstances become responsible for the health of some 3,000 or more persons in a widespread community in Maine. He was on call day and night; the people could not get on without him. Apparently nobody thought it would ever be otherwise or that he was subject to human fatigue until one fine day, at too early an age, he was struck down by a crippling coronary thrombosis. I can't help but believe that his excessively difficult professional life with its perpetual wear and tear had something to do with his illness and that it would have been far wiser—in the long run, or even in the short run—had he secured one or two young assistants before the day he was forced to get them. Two advantages would have resulted had he done this: In the first place he would have conserved his own health and strength and, secondly, the adjustment of the medical care of the community at the time of his acute illness would have been far easier for every one concerned.

The lessons we have been learning about the prognosis of coronary thrombosis have come from our experience with doctor patients even more perhaps than from lay patients, but I still find physicians the most apprehensive and more in need of treatment for their loss of morale than for the heart lesion itself. Fortunately a more optimistic point of view is developing among the doctors themselves but there were a few, even years ago, who helped to steer their own destiny. One doctor in particular I will mention, much beloved in his own community and elsewhere, and known to many of you, the finest type of physician I have met. Nineteen years ago at the age of 60, in the midst of a very large family practice, he was hit by acute coronary thrombosis. He made a good recovery but realized that he must change his mode of life. Therefore he began the study of a special field, my own as a matter of fact, and in all the years since, in travel abroad and in clinics and courses in this country, he has kept abreast of the times, carrying on an active and important cardiovascular consulting practice in the state of Pennsylvania. Even after he was well past 70 he repeatedly came up to us in Boston and was of the most alert of our graduate students, an inspiring example for us all.

Increasing years frequently bring with them defects in the coronary circulation with symptoms therefrom but fortunately in many cases, perhaps in most, compensation occurs as the result of the development of an adequate collateral coronary blood flow. Over a period of such adjustment for weeks, months or even a year or two, caution in living is important; but after the adjustment has been established a fairly normal life can often be resumed. The danger comes mostly from carelessness during the critical period. Only a relatively few persons are persistently severely crippled by coronary insufficiency over periods of years; too often a neurosis, neurocirculatory asthenia, bothersome arrhythmia or even an arthritis or bursitis accounts for much of the persistently recurrent symptoms which may start as angina pectoris and slowly change with the passage of time. Even the electrocardiogram may improve greatly in the course of time after acute or subacute coronary disease, and sometimes it may remain normal at advanced ages. A year or two ago I had the pleasure of seeing a normal electrocardiogram of a physician then in good health at the age of 105; he has since died suddenly and quietly at 106.

INTELLECTUAL ACTIVITY

So much for a few of the observations concerning physical health that have resulted from my experience with doctors as patients. I make bold now to comment on the doctor as an intellectual being. The physician from time immemorial has held a place as one of the leading citizens of his community and of his country, quite naturally so because he had in the first place to have the innate intelligence to be accepted as a scientific worker by preceptor or school and secondly because he passes through an arduous and prolonged course of instruction which must perforce sharpen his wits and cultivate his ability to make quick and sensible decisions.

"Knowledge comes but wisdom lingers" is a proverb particularly applicable to the doctor of medicine.

As long ago as the early days of the Greek era, the important position of the physician was recounted by Homer. During the siege of Troy, Hector at one time ran wild through the Greek army, and Paris, with his arrows, had wounded Machaon, who with Podalirius looked after the Greek sick and wounded.

> The spouse of Helen, dealing darts around,
> Had pierced Machaon with a distant wound.
> In his right shoulder the broad shaft appear'd,
> And trembling Greece for her physician fear'd.
> To Nestor then Idomeneus begun:
> "Glory of Greece, old Neleus' valiant son!
> Ascend thy chariot, haste with speed away,
> And great Machaon to the ships convey;
> A wise physician skill'd our wounds to heal,
> Is more than armies to the public weal."

Much later Plato quoted Socrates as saying to Euthydemus "Of course you who have so many books are going in for being a doctor." Not that a doctor was or need be bookish but his reputation has been that of having read widely and deeply, mostly of medicine of course, but largely in the lives of the many individuals, patients and colleagues with whom he comes

in contact. There need never be an idle moment in his intellectual life, any more than in his physical life. He has less time and need for problem plays and mystery stories and the gossip of the day than any other citizen in the community; his day is one long experience of the sort in his practice, in his teaching or in his research. His life is in fact so engrossing that, as I have said, he too often neglects his health and also too often fails to utilize or even to set aside a bit of leisure for a little intellectual diversion or avocation, no matter what it may be, something absorbing but not difficult, a mental refuge at frequent intervals during his active career, and one to which he may retire when his job is done. Such an avocation may be reading classical or modern fiction or history or biography, or even the writing of such, listening to music or practicing it, drama, painting, photography or modeling, collecting books or maps or anything else, or even dabbling in the fields of the other professions. Too often I have found that the physician who is ill, and must take weeks or months or even a year or two away from his work, faces a void—he must suddenly develop a hobby or avocation. There are some, however, who really welcome a respite, after the first shock of the discovery of their illness has passed, in order to do a few of the things set aside during the years that have passed for just such an occasion. There is only a slight danger that the avocation may prove to be more absorbing than the original profession itself, but if a man is gifted he may become a better novelist, sculptor or musician than he was a physician. There have been some notable examples of this. Care, however, must be exercised that a good physician should not step down to become a mediocre worker in some other field. Also it is true that a man cannot serve two masters: a physician cannot wisely spend the majority of his time on activities unrelated to medicine and expect to retain the confidence and patronage of sick persons, students and his medical colleagues.

THE SOUL OF THE PHYSICIAN

But it is the soul of the physician that puts him in a class by himself, in a place of honor the world around. May it never be tarnished! Temptations have always existed to convert the profession of medicine into a trade, and never more than now; but few have succumbed. Though inarticulate, the great majority of physicians have kept their virtue and have not yielded their birthright for a mess of pottage. For the last few years there has been unseemly quarreling about the danger and degree of state medicine. There has been raised the sad vision of the control of the profession by politicians, as of a football to be kicked about by whomsoever might be in the saddle. Fortunately the loud outcries are subsiding, and sanity and dignity are returning even to those who have made the greatest fuss. Not that the practice and teaching of medicine do not need constant revision and correction like every other human endeavor, but such revision has been going on ever since Adam anyway and it helps but little, in fact it probably retards real progress, to call from the housetops how badly medicine is practiced, administered or taught in any community or state or nation. One can accomplish more by gentler methods, especially by personal example. The unselfish lives of most physicians are still the most potent argument in favor of their enduring need and usefulness. After all the smoke of the recent conflict has died away, we shall still be able to hail with humble satisfaction the words of Robert Louis Stevenson when he said:

> There are men and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not infrequently; the artist rarely, rarelier still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably to have exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and, what are more important, Heraclean cheerfulness and courage. So that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.

Finally, there is one other aspect of the spiritual value of the doctor. He should not only himself possess the highest ideals but should also have a voice in helping to elevate the moral and spiritual level of his own community and country, indeed of the world, and he should make it heard. Just because he is a busy physician does not mean that he cannot have or express opinions other than on health. In fact his altruism and honesty, which are virtues innate in his profession, make him especially fitted to combat, in every way he can, deceit, cruelty, barbarism and immorality wheresoever they exist, in high places or low. In these tragic days gangster régimes in the name of nationalism have professed and practiced these evils. Why should we doctors who abhor such things shut our eyes to them? Let us be honest and lend a hand toward the restoration of nobler things in this world of ours, not simply in our own little corner of the world. We are all neighbors now on old Mother Earth, and we American doctors can still stand for the liberty, honor and brotherhood of man, rejected by the mailed fist and at the moment more in need of help than are our physical ailments, which seem trifling in comparison. We must help to see to it that the night that is falling on the world does not last the threatened thousand years.

It is of interest in this connection that as long ago as 1902, nearly forty years back, William Osler wrote about nationalism as follows:

Nationalism has been the great curse of humanity. In no other shape has the Demon of Ignorance assumed more hideous proportions; to no other obsession do we yield ourselves more readily. For whom do the hosannas ring higher than for the successful butcher of tens of thousands of poor fellows who have been made to pass through the fire of this Moloch of nationalism? A vice of the blood, of the plasm rather, it runs riot in the race, and rages today as of yore in spite of the precepts of religion and the practice of democracy. Nor is there any hope of change; the pulpit is dumb, the press fans the flames, literature panders to it and the people love to have it so. Not that all aspects of nationalism are bad. Breathes there a man with soul so dead that it does not glow at the thought of what the men of his blood have done and suffered to make his country what it is? There is room—plenty of room—for proper pride of land and birth. What I inveigh against is a cursed spirit of intolerance, conceived in distrust and bred in ignorance, that makes the mental attitude perennially antagonistic, even bitterly antagonistic to everything foreign, that subordinates everywhere the race to the nation, forgetting the higher claims of human brotherhood.

It is our profession, we physicians, who can do as much in the future as any other group, in fact probably more, in breaking the bonds of fettering nationalism, and after the bonds are broken in helping to restore the brotherhood of man. These are indeed high words and high ideals, but they constitute a natural evolution from our more ordinary care of man's body.

Massachusetts General Hospital.

Medical Students and the War

The *Lancet* has just published a Student's Guide,[1] although forced to curtail detailed information formerly published in its annual education number.

Medical students in England share the natural impulse to go with their contemporaries into the fighting forces, but they are advised to stay where they are because they will be of more use to their country as qualified medical officers. To settle down to the humdrum of studying and passing examinations requires character, particularly at this time, and not all of them can make the choice. More than one dean has written of students leaving to join up, of others who had to be restrained by advice, and of many who did not seek or did not heed advice in their haste to make a more active expression of service. Those who have remained have won the respect of their teachers by their anxiety to become qualified physicians as early as possible and so be available for any service which their country will require.

Nevertheless, the students have clamored for training and work which may be immediately useful. Some medical schools have arranged courses for training them for serving at first aid posts and on fire squads. Students have attended lectures and drills in their leisure and some of them have been directly responsible for the organization of first aid units. Every student at Oxford has been given a job in the Air Raid Precaution arrangements of the Radcliffe Infirmary, such as anesthetist, operation assistant, blood transfusion assistant or assistant in the mobile unit. Although the students naturally have wanted to join the Home Guard, in several schools the deans have felt that this service would require more of their time than they could well spare. In some places students have been encouraged to do farm work over the week-ends. The women students who have trained as auxiliary nurses at the Municipal Hospital have done well a deserving war service.

The most serious problem at the medical schools has been to carry on the usual high standard of teaching with a depleted staff. The emergency plans have reduced the number of good teachers available, and it appears to some that the arrangements were made without due regard to the needs of medical education. A dean suggests that many of the teaching difficulties now present might have been avoided if a committee or person had been appointed to see that the work of the students was disturbed as little as possible for emergency measures. "The doctors of tomorrow" deserve the best that present conditions can provide.

Some of the present makeshifts in the medical schools are decidedly makeshifts, but others may be the seeds of a new kind of growth. Not all of the results of the upheaval have been disastrous. After a preliminary scattering of the teaching hospitals some have called their students home again to the parent hospital, some have planned a new curriculum which takes the students on a round of hospital visits, and some have stayed at home with a depleted teaching staff since the beginning of the war. Not many of the provincial medical schools have been evacuated, although all have plans to move if necessary.

In the London area the medical students have usually been distributed to two or three sector hospitals. It has been found that what one hospital lacks another can supply, and students like the increased clinical opportunities. Students of several medical schools have become residents in the sector hospitals where the teaching members of the staff are living. This return to the old hippocratic tradition of the teacher and pupil living in close fellowship is valued

1. Students Guide, Lancet 2:267 (Aug. 31) 1940.

by the students. This may be, it seems to some, the only significant innovation in medical education during the war years.

The *Lancet* reviews the changes that have been forced on many of the medical schools:

At Oxford since the outbreak of war the course has been modified to enable the student to take his whole medical course and to qualify as early as possible. The honors examination in physiology is being taken only by those whose tutors especially recommend them; others are being given a pass B.A. degree on the result of their first B.M. examination, thus shortening their course by a year. The medical schools of London were so much disorganized at the beginning of the war that Oxford University arranged for students to continue their clinical teaching at the Radcliffe Infirmary. Accommodation is limited and the number of entries will be restricted to fifty students a year.

The ranks of medical students at the University of Cambridge have been increased by men from St. Bartholomew's Hospital to whom the university has given hospitality. The number of students at Cambridge has not fallen off; on the contrary, it was considerably increased over that of the previous year. University life goes on as usual.

Most of the schools of the University of London moved out of London when war was declared, many of them becoming guests of universities in other parts of the country. Many of the medical schools have since returned to London. There have been no drastic changes in regulations or training in the University of London since the outbreak of war; no examinations were canceled, but the whole series of autumn examinations last year had to be readjusted. Students are received by the university after passing matriculation and become members of one of the thirteen recognized medical schools attached to the teaching hospitals. The students' union at the University of London has given up many of its activities; the boathouse has been requisitioned and the university air squadron closed down and was attached to the Royal Air Force station.

At St. Bartholomew's Hospital Medical School for the first three months of the war the medical students were scattered to eleven different hospitals, but by last January it was possible to arrange a course of medical study and to group the students in a limited number of hospitals. At present there are about 700 students in the medical college. The preclinical students of St. Bartholomew's have been working at Cambridge. The first year students taught by the St. Bartholomew's Hospital staff have been permitted to work in the laboratories of the Leys School. The clinical students have been housed in three hospitals, their first year of clinical work being done at Hill End, their second and half of the third year at Bart's, and the rest at Friern Hospital. The students at Bart's have formed themselves into bodies for various duties—stretcher bearing and dressing—and they work in close cooperation with the administrative staff. Resident experience is rather uneven at present; a man stationed on Hill End, for example, gets no outpatient work. Plans are under way to change the location of resident officers to give them a more general range of experience.

At the outbreak of war, Guy's Hospital Medical School found new premises at Tunbridge Wells, where four large buildings were equipped and furnished, some as lecture rooms and laboratories and others as dormitories. There are accommodations for 300 students. The remaining students live in lodgings in the district. The students in the clinical years are working either at Guy's Hospital itself or at the sector hospitals at Pembury and Farnborough. After a preliminary clinical period at Guy's Hospital the students are sent to the sector hospitals for appointments as clerk and dresser, and after that they return to Guy's for the remainder of their training.

Medical education has been carried on satisfactorily at St. Thomas's Hospital in spite of a smaller number of patients and the loss of various members of the teaching staff to the defense services. The remaining members of the teaching staff have taken on extra burdens, but the spirit of understanding and good will from the students has prevented these from becoming too heavy. The students have worked keenly and well under conditions which make concentration difficult. The preclinical students were evacuated to Oxford at the outbreak of the war and enjoyed the hospitality of Oxford's laboratories for a time until the physiology and anatomy departments at St. Thomas's could be reopened. The teaching of gynecology has been hampered by the reduced number of cases, but the best possible use has been made of the material available. At present, with the exception of a few students who work at special hospitals in the sector, the whole St. Thomas's Medical School is centered on its normal base.

Charing Cross Medical School has 143 students, who at the beginning of the war were dispersed to hospitals in the sector and formal teaching ceased for three weeks. Last January the students were recalled to London from all the sector hospitals except one, and since then the school has returned almost to normal, although the number of patients in the hospital has been greatly reduced. The social and athletic activities of the students' club have been curtailed and their place taken by organized work done in spare time in all branches of the Air Raid Precautions, every student being trained in first aid, stretcher bearing, fire fighting, and anti-gas measures.

For the first term of the war, preclinical students at Middlesex Hospital Medical School were sent to Bristol University. They were recalled last January and have been at work at Middlesex ever since, except for about sixty students who are still distributed in three sector hospitals. The preclinical students have been trained in Air Raid Precautions, especially fire fighting and anti-gas measures, and are available to act as runners. At present there are about 320 students at Middlesex Hospital.

Medical education at the University of Liverpool has been normal in the last year except for adjustments to meet Air Raid Precaution regulations. To expedite the training of students so they can serve as assistants in the wards as soon as possible, all academic and clinical courses have been brought forward by a turn, and the times at which resident house posts become vacant have been adjusted so that they correspond with the final examinations; thus the students may become resident officers immediately on qualifying. Social activities at the University of Liverpool have been little affected; the debating society meets each week and there have been as usual two dances, a ball and a dinner.

At the outbreak of the war the wards of the Cardiff Royal Infirmary, which is the chief hospital of the University of Wales School of Medicine, were almost emptied in preparation for war raid casualties, but after a month it was possible to fill the beds in the wards again with the customary types of patients; so far teaching has proceeded normally, although some teachers have joined the defense forces.

The University of Wales has received fifty clinical students from a medical school in London, in addition to its own students, and to accommodate them a drill hall adjacent to the school was hired for the teaching of pathology.

At the University of Edinburgh the medical course has been carried out during the past year on much the same lines as usual, although students in addition to

the usual courses have received special training in first aid, the treatment of air casualties and gas injuries. It has not yet been necessary to distribute the medical school to other quarters, but plans have been made if it becomes necessary.

It has been possible to continue medical teaching on normal lines at the University of Glasgow, where at present there are 1,170 students; laboratory work had to be modified for a while owing to the blackout. During the year the University of Glasgow has received 180 anatomy and physiology students with their teaching staff from Kings College, London.

Owing to the continued neutrality of Ireland, medical education at the University of Dublin has been little affected by the war and at present there are 465 students. Teaching in the ten clinical hospitals at Dublin also has not been materially influenced by the war.

At Kings College Hospital Medical School, for the first four months of war, teaching was carried on at several centers in the sector to which the medical students had been distributed, but since last January the work has been concentrated in Kings College Hospital itself, Horton Hospital at Epsom, and the Blind School Hospital at Leatherhead. However, the anatomy and physiology students from King's College were sent to the University of Glasgow. Students working in the sector hospitals accommodating Kings College Hospital Medical School live either in billets nearby or in the hospitals themselves. They find that the work in the several hospitals gives them a wider outlook than a fixed course in one hospital, but they get no experience with outpatients in the sector hospitals and they are cut off from laboratories, libraries and museums. Kings College, however, has overcome these difficulties to some extent by sending books and pathologic specimens out to the sector hospitals.

The *Lancet* summarizes the situation in the other medical schools in Great Britain. In general, medical students in the London area have usually been distributed to several sector hospitals. While the fixed courses and routine of the student's existence have been greatly upset, this shoving and changing, the *Lancet* says, has proved stimulating rather than unsettling. The students like the increased clinical opportunities and there have been plenty of patients even if they have to be hunted out of scattered lairs. Few of the provincial medical schools have been evacuated, although all of them have made plans to move if necessary.

The dean of St. Thomas's sees lessons for the future in the present arrangements. The preliminary medical subjects and anatomy, he thinks, might well be taught in two or three large centers. The teaching of physiology, he says, should inform the whole medical course and should not be tucked away in a watertight compartment. He also sees in the future a curriculum no longer loaded with deadwood, and a more rational allotment of time in the various phases of training.

Digests and Reviews

"TWENTY-FIVE YEARS"

The School of Medicine of Washington University and affiliated hospitals in St. Louis has just published a beautiful booklet dedicated to the twenty-five years of training medical students and nurses and of caring for the sick since the hospital and medical group were constructed in the present location on Kingshighway adjoining Forest Park. Following the well known survey of medical schools by the American Medical Association and the report by Abraham Flexner for the Carnegie Foundation on medical education, the medical department of Washington University was reorganized with new hospital affiliations, and the new buildings constructed were dedicated in April 1915. The booklet reviews the history of the medical school from its beginning. The great task of finding those who would financially support the building of a great medical school with affiliated hospitals was guided by Robert Somers Brookings, who was president of the corporation at that time and who not only threw his own fortune and enthusiasm into this work but was able to obtain great sums from families, foundations and other sources.

The greatness of this institution is illustrated in the panoramic view of the campus on the cover of the booklet, in which grateful appreciation of the numerous gifts which provided these facilities and supported the multitude of activities that have been carried on in them throughout the twenty-five years is expressed. The three original laboratory buildings and much of their original equipment were given by Mr. Brookings, to whose vision the medical center stands as a monument. The names of Edward Mallinckrodt, Elisa McMillan and Oscar Johnson also are deeply engraved on this monument. Hundreds of others have contributed in proportion to their means to this enterprise, and still others have given in service and time a devotion that money could not buy. Beside individuals, several foundations have generously aided in the development and operation of the medical school. The General Education Board and the Rockefeller Foundation have given university endowments of more than $6,000,000, the income of which mainly supports the clinical departments. The Commonwealth Fund, the International Cancer Foundation and the Markle Foundation have given generously to term grants to support research projects in hospitals and laboratories. Nevertheless the decline in yield from endowments in recent years has been great, and at present no department in the medical center has a budget large enough to meet its urgent needs, and the resources of the school are not sufficient to maintain the activities at

present levels or to permit new undertakings and improvements essential to normal growth. The most urgent need at present is for unrestricted funds to replace this loss, so that the essential activities can be maintained on a high level. Some of the particular needs of the school are discussed in this booklet.

No recital of figures or money spent or patients treated or students trained would serve to express the service rendered to the sick and the contributions to medical science made from these institutions, the members of the staff of which have included many of the foremost men in medical science.

Here one finds brief mention of some of the contributions to medicine. The first successful removal of a whole lung for cancer was performed in these hospitals, an operation now performed throughout the world. Surgeons from distant countries have come to this medical center for special training. The site of formation of the principal female sex hormone was first established in the laboratories of this medical school. The work begun here led to the isolation of this hormone by others in other universities, thereby establishing a cornerstone of the new science of endocrinology. Another member of the staff has to his credit the first isolation (elsewhere) of progesterone. Insulin, the hormone of the pancreas, is said to have been first isolated in pure form in these laboratories by methods since utilized in its commercial production. A technic which renders the gallbladder opaque to x-rays and therefore visible on the x-ray film, which was developed in this medical center, has greatly increased the accuracy of the diagnosis of gallbladder disease. Virtually every member of the staff conducts some form of investigation, and of the thousands of papers published from departments of the medical school during the twenty-five years some represent notable contributions which have made the authors eminent.

During the first quarter century of operation, 1,791 medical students from nearly every state in the union have been graduated from the medical school, 625 graduates have been trained as house officers in the affiliated hospitals, and 810 student nurses have graduated from the school of nursing. Twenty-five years ago the entering class of medical students was reduced to fourteen in consequence of the stricter admission requirements, but this number has increased gradually until in 1930 the present limit of eighty-two was reached. The number of applicants to enter the medical school at present is about ten times the number accepted, and the selection of the best qualified candidate is a difficult task. The medical school, however, has scholarships which make it possible to accept a few students of unusual ability and promise who without its aid would be unable to study medicine. Loan funds are available to tide worthy students over periods of financial emergency, and last year scholarships amounting to $12,000 and loans totaling nearly $3,000 were awarded.

Last year more than 41,000 were treated in these hospital clinics. The 2,545 living graduates of the school of medicine and of the schools from which they sprang are engaged in practice and teaching throughout the world, and of the six continents only South America and Australia have no representatives in this medical school.

Among the numerous pictures in the booklet are those of members of the faculty twenty-five years ago who still continue in that capacity.

The booklet not only reviews the development of this great cooperative enterprise and its progress throughout the last quarter century but expresses the outlook in facing future opportunities to serve this community and to aid in promoting the health of mankind.

THE PLACE OF PATHOLOGY AMONG THE MEDICAL SCIENCES

Condensed from the First Kettle Lecture, by W. W. C. Topley, published in the Lancet, Dec. 3, 1938.

A scientific territory has no natural frontiers. Its borders are nebulous and changing. It may expand rapidly in one area and sometimes contract in another, and wherever it touches a neighboring field of work there is a mutual infiltration.

A growing science not only expands: it buds and divides. Physiology and pathology are offshoots of medicine. Pathology, in response to the stimulus provided by Pasteur and by Koch, has branched into medical bacteriology, and both physiology and pathology have united with chemistry to produce offspring that have demanded names of their own.

In each of the biologic sciences there has been a general drift from a systematic study of structure and relationships to a study of function, and from a study of any given function as an integrated whole to an analysis of the mechanisms on which that function depends. The movement is, of course, only a shift in the immediate focus of intellectual interest and effort.

Although this drift has been general and continuous in direction, it has not been continuous in rate; so that it is possible to ascribe to particular periods, and often to particular persons, an acceleration so striking as to constitute a new epoch in the branch of the science concerned.

Pathology, like physiology, began with a study of structural changes; but it was still in this phase when physiology had undergone its metamorphosis into an experimental science.

It does not follow that pathology is morbid anatomy or that morbid anatomists are the only

pathologists. A pathologist must have some knowledge of structural tissue changes, but he must also know enough physiology to relate abnormal structure to abnormal function, enough biochemistry to understand something of the chemical causes, or consequences, of the pathologic processes that he studies, and enough bacteriology and immunology to give him some insight into the mechanisms involved in infective disease. No man can be a master in each of all these fields; but they are all pathology, and none of them have an exclusive right to that title.

RELATION BETWEEN MORBID ANATOMY AND BACTERIOLOGY

If the common use of the label pathology as a synonym for morbid anatomy is misleading, the label bacteriology, as far as it implies a differentiation from pathology, is more misleading. The bacteriologist, properly so called, is clearly a particular kind of botanist. He studies bacteria as such. The medical bacteriologist, on the other hand, is a pathologist who is concerned with bacterial and virus infections of man and animals. He must spend much of his time and energy in studying the parasites; but he cannot neglect the hosts. The tissue changes associated with infection are clearly within his province.

A considerable part of the pathologist's work is still concerned with the observation of naturally occurring events not subject to experimental control. He has, therefore, to guard carefully against drawing premature conclusions from inadequate data, and rapid solutions are unlikely to come his way. What is less often realized is that he usually suffers from a similar disadvantage when he confines himself to the experimental field. Here, I think, there is a sharp contrast with physiology. It would not be a gross misrepresentation to attribute the rapid advance of physiology in the last half-century to the successful designing and exploitation of acute experiments—acute, I mean, in point of time. By his skill in this direction the physiologist has been able to obtain rapid answers to many of his problems, not only because experiments of this type give their answers quickly but because their very shortness of duration helps to eliminate the chance intrusion of many disturbing factors. It is altogether probable that similar methods will yield valuable results to the pathologist when he is in a position to use them, and one of the hopeful signs of the present day is the entry into the pathologic technic; but for a long time to come pathologists will be largely concerned with experiments that are as chronic as the processes they are designed to study, and the technic of the long term experiment will be an essential element in their training.

CATEGORIES OF SCIENTIFIC RESEARCH

Scientific research can be roughly divided into two broad categories: those inquiries that are determined mainly by the nature of the problem to be solved and those that are determined mainly by the nature of the technic to be employed. The great names and the great moments of science are associated with a transient merging of these two categories. A technic developed in an attack on one particular problem is found to be applicable to a multitude of related problems, all of which are pressing for solution. Such a period occurred in the bacteriologic field between 1880 and 1900, when, as Löffler put it, "Koch shook the trees and the apples fell." But it is seldom long before the advent of the period of diminishing returns. The new technic takes its place as one of the tools of science, but the advance on that particular front slows up until some new technic is invented. There are not many Pasteurs or Kochs, and the efficacy, even of these great ones, depends in part on the times in which they live and on developments in other branches of science that provide them with the instruments that they exploit. At most times, and for most of us, the choice is less happy. We can attack a chosen problem by slow and relatively ineffective methods, developing them a little where we can, or we can select a technic and apply it to such problems as it is clearly fitted to solve. There must always be compromise based on judgment and experience. The wise investigator will not attack a problem, however interesting or important it may be, if he sees no hope of solving it; nor will he, except when he is learning his trade, be content to apply some existing technic to a trivial problem merely for the sake of getting an answer that can be put on record.

Avoiding these extremes, the choice is free. We need both types of work; and, if we need them it is well to appreciate and understand them. There is, I think, a danger of judging too much on results, and particularly on the form in which results can be presented. The neat and tidy answer to one problem may represent no more significant advance than the ragged and partial solution of another. Above all, it is a frank misuse of words to suggest that the one result is more "scientific" than the others or has been gained by more "scientific" means. So long as the canons of working hypothesis, experiment and deduction are properly observed, and dubious conclusions from inadequate data are avoided, there is no reproach in facing the difficulties of a long road where no short road is available.

RELATION OF PATHOLOGY TO CLINICAL MEDICINE

Neither pathology nor physiology can ignore the problems of clinical medicine, though individual pathologists or physiologists may be well

advised to do so. The clinician, on his side, cannot ignore pathology and physiology. As a result of our labeling, and of the academic organization that has arisen out of it, boundaries have been erected that involve not only separate professional chairs and readerships but separate institutes. Some such separation was inevitable, if only for administrative purposes; but it is worth while to ask two questions: Does it matter? If so, can we do anything to neutralize it?

The answer to the first question, so far as research is concerned, is that for the really original worker, the man who will do the biggest things, it does not matter at all. He will find the niche that suits him, and if he wants help from others, or knowledge that lies outside his immediate sphere of activity, he will get it in one way or another. For the ordinary man I think it matters much more. I do not, for instance, think it is good for a young pathologist in his early or middle twenties to be labeled a morbid anatomist or a bacteriologist or a pathologic chemist and run in blinkers from that day onward. If he is to go far he may, in the long run, have to be mainly one of these things, but a more general background, acquired by some years of browsing in a wider field, is far more likely to put him on a fruitful and congenial line. He will, for one thing, be able to wander in the borderlands, and borderlands are profitable places to explore.

From the point of view of the application of physiologic or pathologic knowledge to curative or preventive medicine I believe that the existing separation matters profoundly. It is the main reason why medical practice and medical science fail to advance as quickly as they might. If the present separation of the medical sciences is harmful, can we do anything about it? I think we can.

INFILTRATION AND INTEGRATION IN MEDICAL EDUCATION

The crux is clearly education. I know of no other curriculum which is so frankly a system of almost disconnected examinational hedges to be jumped and forgotten. The student does not carry much chemistry or physics into his two years of anatomy and physiology. When he starts clinical work he is sometimes told quite frankly by the surgeon that he can forget most of his anatomy and, by the physician, that he can forget most of his physiology. If he fails to be told this in explicit terms, he deduces it himself from the fact that he hears little more of these subjects. By this time, of course, he needs no telling to forget his chemistry and physics. He has done that long ago.

With pathology, in its wide sense, the case is not so bad, for its study extends well into the clinical years; but it is bad enough. The real test of a satisfactory education in medicine is that it should, at one and the same time, fit the student for the work he is going to do in life and teach him to understand and apply the principles on which all true scientific work is based.

Much could be done by a system of infiltration, and in this infiltration I think that pathology, in the broad sense, has an essential part to play.

We should introduce the concept of disease processes, of abnormal function and structure, much earlier and continue the teaching of the ancillary sciences much later in the medical curriculum. This would mean the scrapping of certain things that are now taught, but I would willingly let them go. If the student knows well those parts of anatomy, physiology and pathology that have a direct bearing on his clinical work—knows them so that he can grasp their significance and can discuss them intelligently—he will be a better scientist and a better clinician than if his heritage from his preclinical studies is a vague recollection of a partially digested mass of unappreciated facts and theories.

Apart from the thorny question of medical education, there are other things that we can do if our general aim is to break down existing barriers and build as few new ones as is possible. Separate chairs of morbid anatomy, bacteriology and pathologic chemistry have become an obvious administrative necessity; but I mistrust the housing of this family of sciences in different buildings, nor would I give to one more than another the right to adopt the family name of pathologist.

We shall do well to encourage men whose early training has been in one scientific field to migrate to another and to look favorably on a shift of subject matter from one departmental territory to another. As subjects grow and their technical methods extend or change, there are many problems that are best dealt with in departments other than those in which they first arose. Bacterial enzyme systems, for instance, are clearly the concern of the biochemist rather than of the bacteriologist. We should, at least, be wise not to take out patent rights in any subject but to welcome to adoption even of our pet problems by any one who is prepared to treat them intelligently.

In pathology, the establishment of research institutes and of diagnostic laboratories, in addition to university and hospital departments, is tending to separate three functional classes—the research worker, the applied or so-called clinical pathologist and the teacher. Kettle would, I think, have endorsed the view that most pathologic investigators are the better for a period, if only a short one, spent in diagnostic work, and that the routine worker profits greatly

by an opportunity to attack some of his problems as ends in themselves.

I believe that freer movement across these functional barriers would solve many of our difficulties. Some men will do their best work as investigators, some as teachers and some in applying their laboratory technic to clinical or public health problems. But it is not always clear at the start where a man's gifts lie, and a change of work and experience, a few years' teaching for the research worker, a few years' continuous research for the teacher, and so on, would keep open paths that are closed by premature limitation to one field of activity.

In addition to trying to abolish barriers that already exist, we must prevent the erection of new ones. For example, clinical science, which bears the same general relation to clinical practice that academic bears to applied pathology, is rapidly developing along lines of its own. This movement is perhaps the most important and the most hopeful of the many signs that the medical sciences are developing—that elusive entity known as a Group Mind. It is not altogether fanciful to note the growing evidence that the individual mind, for its healthy functioning, depends much less than we had supposed on localized and specialized areas of activity, and much more on the effective integration of cerebral activity as a whole. To insure such integration in the growing mind of medicine, we must insure that the morbid anatomist, bacteriologist or biochemist who works for the time being in a department of clinical science is not separated in any way from his colleagues who work in the departments that are labeled morbid anatomy, bacteriology or biochemistry.

No man can compass the range of the medical sciences; but we can develop a common tradition, a common background of knowledge and a common way of thought. We can do this best by breaking down existing barriers and erecting no new ones and by training those who come after us to respect scientific method, which includes accurate and critical observation, rather than to acquire, and then forget, an arbitrary collection of unrelated facts and theories.

Pathology, in the course of its development, has faced its own problems and devised its own ways of solving them; but we shall best serve medicine, and ourselves, by not stressing too strongly the particular technical methods on which we have relied in the past, and by a willingness to discard labels or disregard them. If institutes of pathology housed workers who would, under our present conventions, be regarded as physiologists, pharmacologists or biochemists, as well as morbid anatomists and bacteriologists, and if to these could be added others whose usual label would be clinicians, we should not only increase the value of the work done in these institutes but provide the personal links that alone make possible effective cooperation. To be fully effective there would have to be free interchange. It would become a matter of temporary convenience whether a man worked in the department of physiology or the department of pathology, or whether another chose, for the moment, to regard himself as a bacteriologist or a biochemist. It would be essential that there should be no prescriptive rights to senior posts, that a man should not, because he chose to wander between two or more departments, be debarred from normal promotion to any one of them.

There is one factor on which the success of all such dreams depends, and that is the personal one. Cooperation can never be forced, though it can be encouraged. In Kettle's death we lost one who had the gift of true cooperation at its best. His last years were spent in laying the foundations of the department of pathology of the British Postgraduate Medical School, and in his last few days he was thinking of its interests.

Comments

Twenty-two years ago in the worldwide pandemic of influenza there were more than 200,000,000 cases, and upward of 10,000,000 deaths occurred in less than twelve months. In the United States alone there were more than 20,000,000 cases and about 450,000 deaths in less than six months.

Dr. John Lambert Richmond was the first surgeon in the United States to perform a successful cesarean section. The operation was done in Middletown, Ohio, in 1827, without adequate assistance, with only a small pocket case of instruments by the aid of candlelight. The mother survived, but the child died. Dr. Richmond graduated from Ohio Medical College in 1822.

The first operation for gallstones was performed by Dr. John Stough Bobbs of Indianapolis, June 15, 1867. The patient survived and lived for many years afterward. The operation was performed in an upstairs room in a business block. Dr. Bobbs was one of the leading surgeons in Indiana of his day and was the first professor of surgery in the old Indiana Medical College, organized in 1869.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

Clinical Work for Jefferson Juniors

The students of the junior class at Jefferson Medical College, Philadelphia, this year are following a new schedule made up of fewer didactic lectures and more clinical work. The clinical clerkships in the departments of medicine, surgery, pediatrics, dermatology, otology, laryngology, genito-urinary surgery and physical therapy consist of groups of eleven students in a section in attendance on patients of the Curtis Clinic, which is the outpatient department of Jefferson Medical College Hospital. The junior class numbers 130 members, including fourteen students from Alabama, North Carolina, Dartmouth, Wake Forest and Missouri.

Cornell Students Elect Military Training

Training in military medicine has been elected by almost half of the student body of Cornell University Medical College, New York, where courses in the subject are being offered to all four classes, the college announces.

Of the 274 male students, 113 are taking military training and will be eligible on graduation for commissions as first lieutenants in the Medical Reserve Corps.

Designed to provide the army with trained, young, medical personnel, similar courses are being given in about thirty selected medical colleges throughout the country, Cornell being the designated place of study for New York. Dr. Philip B. Connolly, Lieutenant Colonel, U. S. Army, retired, has been detailed by the war department to direct the study here.

Supplementing the college's regular medical curriculum, the courses cover the principles of military science, first aid, treatment of war wounds, camp and field sanitation, preventive medicine as it relates to the diseases common to armies, and related subjects. In addition to didactic instruction and demonstrations, a six weeks camp is held at Carlisle Barracks, Pa., at the end of the second or third year.

Alien Students Must Register

The Department of Justice recently issued a statement cautioning the 6,000 alien students now in this country that they must be registered and fingerprinted before December 26. Because they have been admitted under a special non-quota classification, alien students must present acceptance credentials from a school or college approved by the student division of the Immigration and Naturalization Service, which supervises their activities after admittance. Non-quota alien students are required to carry at least twelve semester hours of academic work, and they must be 15 years of age or older at the time of their admission. The average age of alien students now in the United States is 18. The largest group of alien students in this country today is at Montezuma Seminary, Montezuma, N. M., where 330 students from Central and South American countries are enrolled. These students have been coming to this country since 1937 instead of attending seminaries in Rome and other European cities. The second largest group of alien students (280) is at the University of Michigan; the third (260), at Columbia University; the fourth (175), at the University of California; Harvard, Massachusetts Institute of Technology and the University of Chicago each have 100 or more.

Aviation Medicine at Virginia

The University of Virginia School of Medicine, Charlottesville, is offering a course in aviation medicine this year, including lectures sponsored by the U. S. Army Air Corps and given by a medical officer of the army, and lectures in the departments of physiology, otolaryngology and cardiology. This, it is said, is the first medical school in the country to offer a course in aviation medicine.

Harvard's National Scholarships

Harvard University, Cambridge, Mass., announced, October 11, the award of National Scholarships, the outstanding awards to students entering Harvard Medical School this fall, to James S. Clarke, LaGrange, Ill., S.B., Harvard '40; Martin E. Flipse Jr., Douglaston, L. I., N. Y., A.B., Hope College '40, and Winsor C. Schmidt of Rye, N. Y., who attended Yale. Winners of the scholarships who maintained honor records continue to hold the awards until graduation. The holders of National Scholarships now in the medical school are: Louis E. Ward '43, Mount Vernon, Ill.; Allan L. Friedlich Jr. '43, New York; Glen R. Leymaster '42, Aurora, Neb.; Clarke T. Case '42, Pyinmana, India; Laurence G. Wesson Jr. '42, Boston; Ward S. Fowler '41, Eldora, Idaho; Carl C. Gardner Jr. '41, Columbia, Tenn., and William F. Loomis '41, Tuxedo Park, N. Y.

West Virginia Sophomores Honor Freshmen

The sophomore class of West Virginia School of Medicine, Morgantown, held its nineteenth annual "mix," honoring the freshman class, September 18, at Newman Hall, and nearly all the members of the faculty and student body were present. Refreshments were served. Dean Edward J. Van Liere welcomed the new students, as did Robb S. Spray, Ph.D., professor of bacteriology and public hygiene, and Dr. Simon B. Chandler, professor of anatomy and neurology. During the summer the medical school buildings were redecorated throughout, and several new microscopes were added to the department of bacteriology and pathology.

Western Reserve Changes Curriculum

The medical school of Western Reserve University has decided to substitute required additional work in biochemistry, biostatistics, medical psychology, physiology, pathology and immunology for the optional work in the first year and several optional courses in the second year. Experience indicates that this is advisable to insure a sufficient knowledge of fundamental subjects. Neuro-anatomy will be moved from the second year to the first year. The total number of required hours is increased from 850 to 1,017 in the first year and reduced from 904 to 864 in the second year.

California Visitors

The University of California Medical School, San Francisco, and the laboratories of the Division of Biochemistry in Berkeley recently had the pleasure of visits from Dr. Arthur J. Walker of Freetown, Sierre Leone, South Africa; Dr. George W. McCoy of the U. S. Public Health Service; Dr. Andrew W. Sellards of Harvard Medical School, Boston; Dr. Karl Menninger, Topeka, Kan., who delivered an address before

the California Academy of Medicine in San Francisco; Dr. Philip C. Jeans, professor of pediatrics, State University of Iowa College of Medicine, Iowa City, following a trip to Los Angeles, where he had given a series of clinics; Dr. Clinton H. Thienes, professor of pharmacology, University of Southern California School of Medicine, Los Angeles; William A. Perlzweig, Ph.D., professor of biochemistry at Duke University School of Medicine, Durham, N. C.; R. J. Cowan of the Institute of Medicine and Veterinary Science of Adelaide, South Australia, and A. J. Llacer and J. C. Sozzi, who completed two months' study in ultramicrochemical analysis in Berkeley.

"Living High" at Northwestern

Eighty medical students of Northwestern University Medical School, Chicago, live on the sixth, seventh, eighth and ninth floors of the new twenty story student dormitory on the lake front at Huron Street, which is believed to be the tallest building in the

Abbott Hall

world used exclusively as a university dormitory. The new skyscraper is named Abbott Hall for Wallace C. Abbott, founder of Abbott Laboratories, and his wife, Clara A. Abbott, from whose estate Northwestern University received a gift of $1,500,000 for use in medical, chemical and surgical research. Abbott Hall accommodates a total of 850 students on the Chicago campus of Northwestern, where the professional schools and the evening departments are located. Abbott Hall is Gothic in style, built of Indiana limestone, and each residential floor accommodates fifty-six students. The arrangements permit members of the fifteen fraternities, which previously had occupied temporary residencies off the campus, to have a floor or part of a floor for their exclusive use. In the building are shops, libraries, dining rooms, lounges, squash courts, bowling alleys and a recreational roof garden. Across Lake Shore Drive, which the dormitory faces, is a new beach on Lake Michigan.

University of Georgia

The students and faculty at the University of Georgia School of Medicine, Augusta, joined in a social get-together, September 18, which was one of a series of meetings sponsored by the student-faculty council to promote a spirit of fellowship and cooperation.——A new hospital building, costing $100,000, is to be constructed on the campus through the generosity of Judge S. Price Gilbert in memory of his father, Dr. Jasper Newton Gilbert, who graduated from the medical school in 1885.——Work has been completed on the improvements to the medical school library, made possible by a grant of $10,000 from the Rockefeller Foundation and $15,000 from an anonymous donor.

The Inaugural Session at Jefferson

Dr. Hobart A. Reimann gave the introductory lecture at the opening of the 116th annual session of Jefferson Medical College of Philadelphia, September 18. Dr. Reimann's subject was "Education of the Medical Student." The total enrolment at Jefferson this year is 513, of which 133 are members of the freshman class. All the freshmen completed four years of college work before they were admitted to Jefferson. They came from seventy-five different institutions from twenty-nine states, insular possessions and foreign countries, including Brazil, Korea, Iran, Puerto Rico and Hawaii.

Summer Clinic Service for Creighton Seniors

Creighton University School of Medicine, Omaha, inaugurated this year a summer clinic service for sections of the senior class, alternate thirds of the class spending about seven weeks of the summer in the clinic. The service proved highly satisfactory from the point of view of both students and teachers, and next summer it will be tentatively extended to the incoming junior students. Being relieved of didactic work during this period, the summer clinic service permitted the seniors to study each case more fully.

Medical History at Tulane

Charles W. Crumpton, sophomore at the Tulane University of Louisiana School of Medicine, New Orleans, was awarded the Rudolph Matas prize for the best paper on history of medicine at the annual banquet of the History of Medicine Society, May 15. Mr. Crumpton's paper was on Sir William Osler. Gilcin F. Meadors Jr., '40, was awarded the I. I. Lemann prize for his paper on Marion Sims.

Death of Dr. John McCrae

In the Student Section, September 28, it was said that Dr. John McCrae, Montreal, Canada, author of the poem "In Flanders' Fields," was killed in service during the first World War. It has been learned that Dr. McCrae died of pneumonia. J. C. Simpson, LL.D., the dean of McGill University Faculty of Medicine, Montreal, where Dr. McCrae was a member of the faculty, writes: "In the winter of 1917-1918 Lieutenant-Colonel McCrae was in charge of medicine in No. 3 General Hospital (McGill), C. E. F. at Boulogne. On the evening of January 23, word was received from headquarters that he had been appointed consulting physician to the First British Army Corps. The officer commanding his unit went to Colonel McCrae's quarters to offer congratulations but found him with a temperature around 99 F. and persuaded him to remain in bed till morning. The next afternoon definite signs of pneumonia began to develop and he was transferred next day to No. 14 British General Hospital for Officers. He rapidly sank, however, and died at 1:30 o'clock in the morning of Jan. 28, 1918."

Prizes Awarded at Temple

At the annual dinner of the graduating class and the medical alumni association of Temple University School of Medicine, Philadelphia, June 12, Dean William N. Parkinson awarded the following prizes to graduates and students for 1940:

Maurice L. Brown, the faculty prize, a gold medal for having attained the highest average during the four years course; the gynecology prize by Professor Hammond to the senior with the best record at the end of the course in gynecology; the proctology prize by Professor Hibshman to the senior for the best examination in proctology.

Clarence A. Holland, the alumni prize of $25 to the senior passing the best examination for the year, provided the last three years of the course were taken at Temple.

Harold V. Harbold, the surgery prize by Professor Babcock to the senior giving the best written report of the surgical clinics for the year—a gold medal and $50; the second prize, a silver medal and $25, was given to Clarence A. Holland.

Gilbert Barron, the rhinolaryngology prize by Professor Ridpath to the senior passing the best examination in rhinolaryngology.

Robert J. Jahn, the otology prize by Professor Ersner to the senior passing the best examination in otology.

Harold I. Lecks, the urology prize by Professor Thomas to the senior passing the best examination in urology, and the C. V. Mosby Company prize to the senior with the highest average in medicine, a year's subscription to the *American Heart Journal*.

Jerry Zaslow, the dermatology and syphilology prize by Professor Wright to the senior presenting the best record in the course for the junior and senior years.

Mary Catherine Cortner, the hygiene and public health prize by Professor Hartley to the senior presenting the best sanitary and health survey of his home town.

David S. Ruhe, the senior surgery prize by Professor Babcock, a silver medal and $25, to the junior presenting the best report of the junior surgical clinics for the year.

Milton M. Cahn, the junior obstetric prize by Professor Arnold.

John T. Ealy, the surgical procedures prize by Dr. J. N. Coombs to the junior presenting the best report on surgical procedures.

Charles B. Hess, the C. V. Mosby Company prize, one year's subscription to *Surgery*, for the highest average in surgery for the senior year.

University of Texas

Interest is being shown in the attempt to organize a medical school glee club at the University of Texas, Galveston, under the direction of Mr. Charles Spence, a sophomore.——William Mills has been elected president of the freshman class at the medical school, and R. V. Jones, president of the sophomore class.——An innovation in the curriculum for the senior students is a one week's externship in pediatrics at the Jeff Davis Hospital in Houston, which is required for credit in the course.——At the official opening of the school year, October 1, Dr. Raymond Gregory, newly appointed professor of pharmacology and medicine, was the principal speaker; his address dealt with the importance of laboratory courses in the medical curriculum, the value of wide reading on the part of the student and the rewards of scholarship.

Dr. Leake Lectures at Oklahoma

Phi Beta Pi at the University of Oklahoma is sponsoring an annual lecture known as the Leroy Long Sr. Lectureship. The first address was given, March 12, at the University of Oklahoma School of Medicine, Oklahoma City, by Chauncey D. Leake, Ph.D., professor of pharmacology at the University of California Medical School, San Francisco, on the "History of Anesthesia."

College of Medical Evangelists

Five alumni of the College of Medical Evangelists, Los Angeles, are sponsoring an organization including fifteen students each from the junior and the senior class to promote fellowship between the students and the alumni of the school. At the meetings held once every three weeks, a part of the time is given over to an informal talk by some prominent physician of southern California, the remainder being spent socially. It is hoped that other alumni will sponsor similar organizations.

A new laboratory building was completed last January to house the physiology, biochemistry, pharmacology and physical therapy departments. The old South Laboratory Building, which formerly housed these departments, has been taken over by the outpatient clinic. In the clinical division at the college, in order to correlate more closely the didactic work with the clinical clerkships, it is planned that instead of giving formal lectures the teachers will conduct round table discussions or conferences with small groups of students.

Columbia Awards One Hundred Scholarships

The 133d session of Columbia University College of Physicians and Surgeons, New York, opened, September 19, with 410 students enrolled, including 110 freshmen, who came from twenty-five different states and from forty-seven different colleges and universities. At the opening exercises, September 25, George W. Bachman, Ph.D., director of the School of Tropical Medicine, San Juan, Puerto Rico, gave an address on "Medical Research in Latin America."

The College of Physicians and Surgeons has awarded 100 scholarships totaling $36,675 for the present academic year. Most of the scholarships awarded were amounts ranging from $200 to $500.

Student Officers at Tulane

Arthur J. Wallace Jr., '41, University of Tulane of Louisiana School of Medicine, New Orleans, has been elected president of the senior class for 1940-1941; John B. Trible, vice president; Hugh Murphy Yearwood, secretary; Richard Baker Austin Jr., treasurer, and James Harvey Johnston Jr. and Samuel Gwin Robbins honor council members.

Musical Medical Society

Phi Mu Phi, an honorary musical medical society of the University of Illinois College of Medicine, Chicago, created in 1931, is said to be the only organization of its kind in a professional school in this country. It is composed of a concert orchestra, a men's glee club and a "swing band" and gives several public concerts and radio appearances during the year. Sponsored by members of the faculty, medical students are encouraged to try to associate themselves with the society. Phi Mu Phi, which was founded by undergraduate students, offers an excellent source of recreation and extracurricular activity.

Pennsylvania State Board Questions

The following questions were given by the Pennsylvania State Board of Medical Education and Licensure at the examination in Harrisburg, July 9, 1940:

PHYSIOLOGY, PATHOLOGY, BACTERIOLOGY AND PHYSIOLOGICAL CHEMISTRY

1. State what further laboratory tests would be indicated in each of three specific findings in a routine urinalysis.
2. Outline briefly the function of the liver.
3. What are the normal findings in a gastric analysis? Give the significance of each of the more common abnormal findings.
4. Outline the laboratory investigations called for in a case of edema.
5. What is the meaning and the significance of each of the following: (*a*) nystagmus? (*b*) reaction of degeneration? (*c*) aphonia?
6. Describe briefly the vasomotor system. How may it be seriously altered functionally? pathologically?
7. What is the physical consequence of a deficiency (*a*) in vitamin C? (*b*) in pituitary secretion in childhood?
8. Give specific directions for obtaining and for transmitting to the laboratory suitable specimens for determining the etiology (*a*) of purulent conjunctivitis; (*b*) of acute pharyngitis. What micro-organisms are suspected in each?
9. State the significant feature in bacteriologic investigation that identifies each of the following: (*a*) tubercle bacillus; (*b*) Klebs-Loeffler bacillus; (*c*) Spirochaeta pallida.
10. In a case of progressive debility without fever in a middle-aged man, what laboratory investigations might establish the cause?